SEPTEMBER, 1943

Industrial FINISHING

Published Monthly in the Interest of Modern Production Finishing

PROTECTION plus... that's what our Flying Fortresses have — fire-power that blasts enemy opposition to bits. Likewise, LILLY'S FINISHES offer protection *plus* for armaments, implements of war and accessories of war.

LILLY VARNISH COMPANY
Indianapolis, Indiana
Branches : Chicago, Ill.; Grand Rapids, Mich.; Gardner, Mass.
THE LILLY COMPANY, High Point, North Carolina

YOU CAN'T LOOK TWICE

Going 6 miles per minute!

Instant Legibility Assured With ROXALIN Finished Instruments

A small, but vitally important item on most combat equipment, is the instrument dial from which split second, accurate readings must be made.

The permanent retention of balanced contrast between small black figures on a non-reflective white background is now possible through the use of Roxalin DIAL WHITE Enamel* which overcomes the weakness of conventional materials formerly used for this purpose.

Roxalin DIAL WHITE will not discolor on aging, is unaffected by sudden temperature changes, and retains its initial clean white tone even after long exposure to chemical fumes frequently encountered in molded plastic housings.

It is easily applied in production by spraying or roller coating, sets up to handle in lacquer time or may be forced dried if desired.

Write for complete information.

*Another coating of plastic by Roxalin.

ROXALIN *Flexible* FINISHES
INCORPORATED
ELIZABETH, F. NEW JERSEY
Box 193

Enthone

ENAMEL STRIPPERS*

WORK CLEAN AND FAST

The above panel shows how fast Enthone Enamel Strippers go to work.

Panel "A"—*Original enamel of urea-formaldehyde type*
Panel "B"—*After one minute in stripper*
Panel "C"—*After two minutes in stripper*

Notice that the enamel lifts away from the surface, leaving it clean and unattacked.

Enthone Enamel Strippers do not attack any base metal or anodized coatings.

Consult Enthone for stripping synthetics, japans, lacquers.

THE ENTHONE CO NEW HAVEN CONNECTICUT

REPRESENTATIVES IN PRINCIPAL CITIES

*Protected by U. S. Patent No. 2242106

New Zapon Wrinkle S-637 for War Work

Synergism helps overcome lack of china wood oil!

Zapon's new wrinkle finish, made without use of critical china wood oil, is now available and should continue available for all essential needs of war production. Numbered S-637 in the Zapon series, it has many applications on today's important products.

This new wrinkle by Zapon has all the advantages of previous Zapon wrinkle finishes. It is highly resistant to water, grease and other agents; it is tough and long wearing, permits fine or coarse wrinkles, and provides uniform wrinkle formation.

Once more minds clicked synergistically to help create this new product. Chemist sat down with chemist to determine how a sound wrinkle finish could be secured without scarce china wood oil. Formulas were compared, tested, improved, and today Zapon S-637 is on the production firing line, bringing the many advantages of wrinkle finish to a wide variety of armament parts.

WHAT IS SYNERGISM?
In Synergism, forces—minds—work together to produce results greater than both working separately might achieve, making 2 + 2 = 5.

Licensed by How Wrinkle, Inc.

ZAPON

ZAPON DIVISION · ATLAS POWDER COMPANY

Eastern Sales: Stamford, Conn. Western Sales: North Chicago, Ill.

INDUSTRIAL FINISHES

NINETEENTH YEAR OF PUBLICATION

Industrial FINISHING

W. H. ROHR, Editor E. A. DOSCH, Assoc. Editor

Vol. XIX, No. 11 SEPTEMBER, 1943 $2.00 a Year

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Eastern Representative: C. A. Larson, 254 West 31st Street, New York City; Phone Penna. 6-7049

Approved Service Colors for Marking Overseas Shipments

RONAN

"MARK-IT"

TYPE A (Lacquer Type). These colors are waterproof and sunproof. They may be used with a marking brush or sprayed through stencils. Immediate drying. Work equally well on paper, cartons, wood cases, fabric or other packaging materials. Available in U. S. Army Specification colors for Ordnance, Air Force, Engineers, Chemical Warfare, Quartermasters, Signal, Medical and Transportation. Also Black-out Tan, Clear and Olive Drab.

TYPE B. Fast-drying paste colors for roller coating and striping. Dry flat in 2 minutes.

TYPE C. For silk screen application.

Write for details, prices and color card.

RONAN

T. J. Ronan Co., Inc.

749 E. 135th St., New York City

Paints — Varnishes — Lacquers

Letters from Readers

Roller Coaters

We noticed in August issue, on page 8, an inquiry for roller coaters. We, too, would appreciate having such a list.—R. S. Co. (Furniture).

Information supplied.—ED.

Spray Booth Coating

On pages 7 and 8 of the August issue, we notice two letters of inquiry regarding coating material for ease in cleaning the interior of spray booths. If you will give us the names of these readers we will be glad to tell them about our Liquid Spray Shield, which we recommend for this purpose.—THE DEVILBISS CO.

Liquid Armor Not Available

We have your letter of the 28th, asking for information regarding our "Liquid Armor" Tank Car Enamel. Presumably you have reference to the product we furnished in the past to the Union Starch Co.

For the duration we will not be able to supply this product. This is a special Tung Oil-Bakelite product that we developed for this kind of work and the meager stocks of tung oil in this country have been taken over for the war program exclusively. —Missouri Paint & Varnish Co.

For Tilting Large Containers

In the July issue, page 7, we note some inquiries from F. E. Inc. (Refrigerators), asking for information as to who manufactures equipment for handling steel drums. We are sending our bulletin No. 507, which

PLANNING OUR FUTURES

WHEN THE lights go on again and our victorious boys come home, they will want jobs with a future—NOT RELIEF.

It is up to us to keep our Industries going and to plan now for future operations.

While serving our Government with total productive capacity, we are exerting every effort to develop products which may well lead the post war parade in Protective Coatings and Industrial Finishes.

Our research laboratories have already developed numerous products which may be applicable to your future plans. *You need only write, indicating your interest, to obtain information and service.*

V. J. DOLAN & COMPANY, INC.

Mnfrs. of "Unquestionable Quality" Industrial Finishes

1830 N. LARAMIE AVE. CHICAGO, ILLINOIS

PERFECTION

FULL RUBBED EFFECT *without rubbing* CUTS LABOR COSTS.

FLAT FINISHES

are made by chemical treatment of Gums—not with stearates. They produce a clear finish • will dull rub or polish • no haze after rubbing • will air dry or force dry • no printing • waterproof • liquor-proof • durable and economical. Full range of sheens.

PERFECTION PAINT & COLOR CO.

INDIANAPOLIS, INDIANA

United's NEW WRINKLE

Made from Non-Critical Oils

The use of critical oils in wrinkle finishes has been prohibited due to a critical shortage.

United's Technical Staff has met this challenge by developing a new wrinkle which is formulated from non-critical oils. It has the characteristics of our standard wrinkle regarding appearance, uniformity, application, and baking schedule, etc. It is available in various colors and shades.

A trial order will convince you of its merits.

United Lacquer Mfg. Corp.

General Offices & Factory: LINDEN, N. J.
New England Mfg. Div.: Boston, Mass.
Lacquers — Synthetics and Special Protective Coatings for All Surfaces

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ATTRACT ATTENTION WITH

COTTON or RAYON

FLOCKS

applied by screening or spray gun on your every day or holiday products. Beauty and utility can be increased at very small cost on items of wood, paper, metal or glass, with added profit to you.

Write for samples and standard color card.

CLAREMONT WASTE MFG. CO.

CLAREMONT, N. H.

The country's largest manufacturers of Flocks

shows our complete line of this equipment, and we shall be glad to send information to your inquirer, if it is in order for you to give us his address.—MORSE MFG. CO., Inc., Syracuse, N. Y.

Who Supplies Bostwick Cement?

We are in the market for Bostwick Cement in black and white and have been unable to obtain same. We would appreciate it very much if you can advise us who makes this product and where we can purchase it in New York City.—P. B. Co.

We suggest that you communicate with the Voorhees Rubber Mfg. Co., Inc., 215 E. 42nd St., New York, N. Y. This company is listed in our directory as manufacturers of belting, hose, packing, etc., under the trade name "Bostwick."—ED.

Can Supply Ceramic Finish

I have just read an inquiry in your July issue regarding a Ceramic Finish, signed "O. C. Co." I am taking the liberty to advise you that we have a ceramic finish in all colors, which is meeting with great success throughout the country.

Our ceramic is highly resistant to heat, will stand more than 200 hours in salt spray test, and will bake at 350° F. in 30 to 45 minutes. We will gladly furnish panels and information regarding our product to any of your readers.—F. J. K.

Drying Oven Wanted

We are considering the installation of drying and baking equipment for application of black crackle finish. The size oven that would serve our needs would be a rather small one, since the parts for our instruments are not manufactured in large volume. We have in mind a rack type oven that would probably be a direct-fired oven and would probably be the smallest type that you have available. A temperature range of 150° to 400° F. would be desirable.

We would appreciate your kindness in turning this over to some of your advertisers. Thanking you for favoring us in this matter, we are—Moore Products Co.

Heat-Indicating Paper

We note in your August copy under "Letters from Readers" that the Nashua Gummed & Paper Coated Co. is looking for a market for a paper

★ ★ ★ ★

Specifications + PLUS!

Adaptation of formulae to the individual requirements of busy war contractors.

★ ★ ★

Within specification limits there are many possibilities of improvement in speed, workability, and freedom from rejects.

This PLUS factor is worth considering. We'd like to tell you more about it.

★ ★ ★

THE VARNISH PRODUCTS COMPANY

CLEVELAND, OHIO

★ ★ ★

GET NEW
Rich
Colorful
EFFECTS
WITH
Cellusuede
FLOCK

Easily applied to cloth, paper, metal or wood with a spray gun or by sifting. Rayon and Cotton Flocks supplied in one pound bags, twelve to a case, solid or assorted colors. Also supplied in 10 and 50 pound bags. Wide variety of standard colors. Special colors, if desired, in lots of 100 pounds or over. Many distinctive color effects produced by varying shade of adhesive and flock. Write for Color Card, samples, detailed information.

CP
Cellusuede Products, Inc.
ROCKFORD, ILLINOIS

that indicates temperatures. We have use for this type of paper in checking temperatures on plywood pressing of veneers. Our range is from 150° to 350° F. and we would like to get samples of paper that will indicate these temperatures.

We would appreciate it if you would forward this letter to the Nashua Gummed & Paper Coated Co.—M. Co.

The N. G. & P. C. Co. is located in Nashua, N. H.—ED.

Information on Infra-Red Heat

We are interested in applications of infra-red heat in the paint industry, and would be obliged if you will forward our name and address to the publishers of the "Radiant Heat Booklet", mentioned on page 86, of May 1943 issue of INDUSTRIAL FINISHING. Please request that they mail us a copy of same, and of any other literature which they may have, dealing with infra-red rays.—Lusterold Pty. Ltd., Rosebery, N. S. W., AUSTRALIA.

Lingerwett Varnish Remover

I have a customer who wants a remover put out under the trade name of "Linger-Wet". Do you happen to know of such a remover, and the name of the manufacturer? Would appreciate your giving me the address and name.—C. R. B.

Probably you have in mind "Lingerwett", which is a product of Wilson-Imperial Co., 115 Chestnut St., Newark, N. J.—ED.

Electrical-Conducting Paint

On page 4 of July issue, you indicate that you have available a list of manufacturers of electrical conducting paint. We would appreciate receiving a copy of this list.—MICA INSULATOR CO.

We are not certain about this, but it occurs to us that any of the metallic paints, such as aluminum, copper, bronze powder, etc. (wherein actual metal flakes are used in the paint) would serve to conduct electricity through the paint film. Whether or not such metallic paints can be obtained at this time, either with or without priority, we are not prepared to say. In a letter we are submitting a list of concerns that formerly supplied such materials.

Perhaps some reader can give us some additional information on this subject.—ED.

★

Lacquers

Fillers

Stains

Enamels

Paints

Business NOT as Usual . . . .

Almost every finishing material has been changed to meet today's conditions—

Almost every finishing process has been altered—

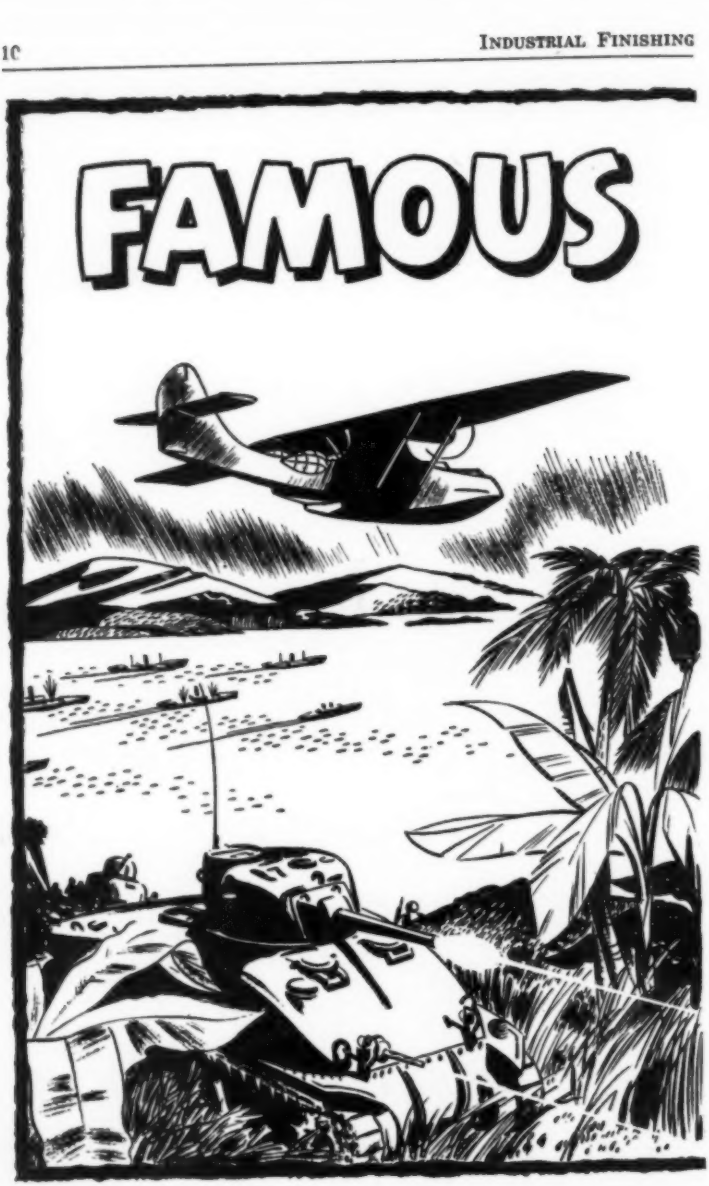
But we have finishing materials for you which will do **today's** job.

Give us a brief statement as to your needs—we will give you a prompt answer.

★ ***Use Stille-Young Finishes and "Finish with Confidence"***

THE STILLE-YOUNG CORPORATION

2300 North Ashland Avenue • CHICAGO, ILLINOIS


FAMOUS

FINISHES

How Pittsburgh's technical staff keeps pace with the frequent changes in specifications caused by the variety of operating conditions in this war.

ON ALL types of war equipment, Pittsburgh's famous finishes are now in service from the frozen tundras of Russia to the steaming jungles of New Guinea . . . from the arctic Aleutians to the deserts of North Africa.

Due to the so widely different extremes of climate which finishes must withstand, modifications in government specifications are constantly being made. Pittsburgh technical men have the skill and experience to make prompt adaptations, within the limits of these changed specifications, which will assure trouble-free application under conditions prevailing in your plant.

In addition, our technical staff endeavors to put into every Pittsburgh formulation a margin of superiority—a plus over specifications—so that the resultant finishes will render appreciably longer service and give better performance than the specification writers anticipated.

Free Advisory Service: Pittsburgh maintains a force of "trouble-shooters"—experts whose specialty is solving difficult finishing problems. Whenever you need help, get in touch with us. One of our technical men is available for consultation.

PITTSBURGH PLATE GLASS COMPANY — Industrial Paint Division, Pittsburgh, Pa. Factories: Milwaukee, Wis.; Newark, N. J.; Houston, Tex.; Los Angeles, Calif.; Portland, Ore.—Ditzler Color Division, Detroit, Mich. — The Thresher Varnish Co., Dayton, O.

PITTSBURGH *Industrial* **FINISHES**

PITTSBURGH STANDS FOR QUALITY PAINT AND GLASS

MR. TAYLOR: "A good idea, Mr. Neilson—but I thought everyone knew about the merits of **PREP PRODUCTS.**"

MR. NEILSON: "Well, I believe many paint superintendents do not understand that **PREP PRODUCTS** will clean the metal, remove rust and provide a better bond between the paint and metal surfaces."

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NEILSON CHEMICA CO

Australian Agents Hardie

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Write for PREP PRODUCTS Bulletin

(Representatives Available in Most Sections of the Country)

6562 Benson St.

COMPANY *Detroit 7, Mich.*

Agents: Hardie Trading Pty, Ltd., Melbourne.

HILO RIP-PL FINISHES

Performing

IMPORTANT WAR DUTY

FOR LEADING MAKERS OF

Radio and Electronic Equipment

Hilo Rip-pl Finishes are now made with a Linseed Oil Base. May be baked like the old type wrinkle finishes. These Rip-pls will meet all the requirements of exterior durability, salt spray resistance, toughness of finish, etc.

Write Today for Samples and Details.

HILO

Established 1863

HILO VARNISH CORP.

42-60 STEWART AVENUE BROOKLYN, 6 N. Y.

CHICAGO: 2420 Washburne Avenue BOSTON: Park Square Building

STERLING 1000

New Electric Portable Sander

Tough... Efficient... POWERFUL!

Smooth out operator jitters... and smooth out production problems at the same time—with the "Sterling 1000"... Power to spare, rapid cutting, yet its scientifically engineered, counterbalanced mechanism operates without trace of vibration! Built like a fine watch, but extra *sturdy* and *tough* for a thousand types of production.

Designed on New Sanding Action Principle!

Orbital, circular, thousands of abrasive grains cut furrows which cross and recross each other. With this action, the "Sterling 1000" cuts faster—produces the smoothest surface on wood, metal, plastic or composition. Ideal for many rubbing and polishing operations.

Write today for your copy of the New "Sterling 1000" folder, describing 21 important features *in detail.*

STERLING TOOL PRODUCTS COMPANY

365 E. Ohio Street, Chicago, Illinois

615 W. Washington Blvd., Los Angeles, Calif. • 74 Wellington Street, W., Toronto, Canada

VARNISH-DIPPING AND OVEN-DRYING

Coils and Armatures

BY C. W. HAROLD

EDITOR'S NOTE: *Onan gasoline-driven electric power plants were in operation in 49 different foreign countries before Pearl Harbor. Today these electric units are being used by 41 different branches of our armed services alone—for use in the air, at sea, and on land. Typical uses: Operating searchlights, aircraft detectors, anti-aircraft guns; loud speakers, movie projectors, radio transmitters, X-ray equipment; refrigerators, hospital apparatus, saws, machinery, ironers; plus all the more common applications of light and power for camps, tents, field kitchens, medical stations, battleships, aircraft carriers, etc.*

Since the baking of tough, enduring varnishes on this electric equipment is so frequently the source of a bottleneck in production, Onan's method of "keeping things moving" is of special interest at this time.

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That the company can turn out so many units today is due to the development of a plan of organization, with mass production in mind. Company officials realized that only an efficient plant layout and production set-up would keep products moving forward smoothly. Accordingly, when things broke loose in Europe and Asia they had already anticipated possible bottlenecks and were set to avoid them.

Knowing that the oven department where varnishes are applied and baked, is so frequently a "monkey-wrench" in the production line, company officials analyzed the difficulties others had experienced and planned to overcome them in advance.

Develop Efficient Armature Assembly Line

They decided that most troubles in coil-and-armature baking could be traced to one or more of these things: 1) poorly planned production lines; 2) needless handling of material in dipping, loading, etc.; 3) improper insulating varnish; or 4) ineffective, slow-baking ovens.

First of all, they planned each assembly line so there could be a cumulative addition of parts or services in a logical, easy-working manner. Thus, stages of manufacture could be checked easily, new employes would learn the routine faster, and the possibility of assembly errors would be greatly reduced.

Working in a long, well-lighted room at endless benches, each with plenty of clear area and space, armature craftsmen assemble each unit from the initial shaft to the product ready for varnishing. Pro-

IT ISN'T IN THE CARDS

No use dealing the cards to find the answer to your finishing problems. It's a job for experts. If it's a coating for metal, wood, composition board, paper, or fabric, we have the correct formula or can make you one. If it's a special problem arising from War Department or Navy specifications, we can help you. Our laboratories are at your service. No problem is too tough. Give us a ring at our expense: Phone Pittsburgh, CEDAR 8100. Our technicians are always glad to discuss coating problems.

WATSON-STANDARD CO.

Manufacturers of
PAINTS · VARNISHES · INDUSTRIAL
FINISHES AND LITHOGRAPH COATINGS

FACTORY AND GENERAL OFFICES:
PITTSBURGH, PA. · WAREHOUSES:
BOSTON, BUFFALO, DETROIT, NEW YORK

TOUGH JOB HEADQUARTERS
℞ **Prescription Finishes**
Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

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View showing how armatures are racked and handled for varnish dipping and oven baking. The loaded rack can be quickly switched to tracks entering any one of the three ovens. Photograph, courtesy of Despatch Oven Co.

tective shields are applied to prevent varnish from entering portions of the drive assembly of the armature.

Portable Racks Moved Under Overhead Rails and Hoists

In the varnish baking room the problem of armature dipping, draining and baking was studied with the idea of saving time and labor.

Five loading operations were necessary before a given job was ready to leave the baking department. This seemed like too much. Eventually a system was worked out which simply requires that the coils, stators or armatures be placed in a load-rack and left there until they're ready to be removed and sent out for cleaning.

Three coil-and-armature baking ovens are placed together as a bat-

tery to face a varnish-tank booth, which is fully enclosed and has a double-door. Between the varnish booth and the line of ovens is an open area about 18-ft. across. In this open area engineers set up an overhead tramrail system that allows seven racks to be shuttled back and forth and switched to any desired position — in any of the ovens, draining pans or varnish booth.

Overhead tracks extend outward from inside each oven. Cutting at right angles across these three tracks is an overhead transfer bridge. This bridge can be swung from one position to another in a few seconds, and locked into place, thus permitting the transfer of a portable dipping-drying rack in the shortest possible time. Tracks left "open" by movement of the transfer bridge have automatic safety latches so that derailment is impossible.

Each of the seven portable racks is equipped with ball-bearing wheels which travel on overhead steel tracks. Coils, stators or armatures are suspended by hooks from the top of each rack. This holds them firmly during varnishing, draining, baking, redipping and rebaking.

The entire carrier system was designed and installed by Onan engineers, including immersion apparatus for lowering racks into the varnish tank. This consists of a continuation of the main track of the tramrail system into the varnish booth. When a loaded rack is rolled into the booth, an operator turns an air-hoist valve, and the entire track-section descends to immerse the load into varnish. About 10 seconds are required for lowering a rack into the tank. Operation of another valve causes the hoist to raise the load back to main-track level.

The net saving in the carrier system alone has meant eliminating four handling operations, plus an enormous saving in time and labor as well. And by using seven load-racks, all three ovens can be kept in operation constantly, if desired, with no delay between charges.

Adopt Uniform, High-Resin Insulating Varnish

Selection of the best varnish was a difficult problem because of the extremes of heat, cold and climatic conditions to which the units are subjected. A varnish of high dielectric strength was desired—one that would impregnate thoroughly and have smooth baking properties in addition to toughness, hardness, moisture-resistance and resiliency. It had to be a varnish that would be uniform regardless of the time of purchase or the quantity desired.

Rigorous tests were made of various varnishes over a long period of time. Ultimately a synthetic high-resin product was adopted. Room temperature was found to be best for satisfactory impregnation of varnish through coils and armatures at this plant. The tank proper is 6x8x8-ft., and has a capacity of 1,100 gallons.

The first dipping of coils, stators and armatures is for 30 minutes, followed by a 40-minute drain. The second dipping, after the initial baking, is simply "down and up," with the same draining time.

Reduce Baking Time With Forced Convection Ovens

That the use of forced convection ovens can effectively reduce baking time from 25% to 35%, is proved by this company's experience. In addition, the quality of the baked finishes is greatly improved and the "cost per charge" of fuel used is

remarkably low. How this was brought about is a rather interesting story in itself.

There are two schools of thought about armature baking and the baking of varnishes, paints or other finishes. One of these advocates infra-red lamps arranged in banks, with a conveyor carrying the material through a tunnel-type oven. The other idea is forced convection heating in approved type of ovens, where uniformly heated air is smoothly forced through the load of material being baked.

At the various Onan plants, both types are used successfully. Engineers believe that each system has certain advantages, depending on the particular job involved. At the Arrowhead plant, for example, infra-red ovens bake large-size armatures quite effectively.

However, most of the stators, armatures and coils are baked in forced convection ovens exclusively. Success of these units, in fact, is a major factor in Onan's production story. Here are the details.

Three Ovens in a Row, All Gas Fired

At the Onan University plant, a battery of three ovens is used. These ovens are heated by an especially powerful forced convection heating system which is gas-fired.

Each oven compartment is 6x6x6-ft. inside, and accommodates a load-rack holding 72 armatures or twelve 150-lb. stators or 100 complete sets of coils. Armatures weigh up to 65-lbs. each (6x15-in.) while stators average 17-in. in diameter and weigh 150-lbs. each. Thus a ten-hour baking output from the battery of ovens averages seven tons or more. Initial bake of stators and armatures is for four hours at 300° F.; that of coils is two hours at 275° F. Second baking is the same time and temperature.

Operating at any desired temperature (275° to 450° F.), each oven is heated by a separate gas-fired heater mounted overhead; this heater has a capacity of 250,-000-BTU'S per hour and is equipped with a "controlled combustion" device to allow adjustment for maximum heating efficiency regardless of volume of gas used or whether at high or low temperatures.

Fans Direct Heated Air

Heavy-duty all-welded steel fans force heated air down heat ducts and into the oven chamber through a series of adjustable ports. This system allows close control of heat distribution and air-flow, so that uniformity throughout the entire chamber is closely maintained. Heated air travels horizontally through the chamber, entering recirculating ducts on the opposite wall.

Temperatures are automatically controlled by instruments (including chart recorders) operating in conjunction with Minneapolis-Honeywell V-413 valves. This assures prompt response to control instruments so that there is no surging or overshooting of heat when climbing to temperature, yet no delay occurs in supplying adequate heat. Special ventilation is provided by a separate 3-h.p. exhaust fan, with stack dampers in each oven.

In addition to the standard safety equipment provided with the baking ovens, Onan engineers arranged a system of water-sprays in each oven chamber, and Foamite spray in the varnish booth. Four manual valves, mounted on a red "fire" board, control the supply to the three ovens and the booth. *(to p. 20)*

So successful has been the operation of the oven department since the installation of this equipment (rack conveyor system, varnish-dip apparatus and forced convection ovens) that at no time has there ever been any production delay.

Even when circumstances have made it necessary to run certain jobs as "emergency, rush!" the work has gone through on schedule without sacrificing any quality whatsoever, either in varnish impregnation or baking. This, for any plant, is something of a record.

In fact the net result of its careful study of what was needed to keep production moving smoothly, has brought to Onan some positive results which will be just as valuable in peacetime production later:

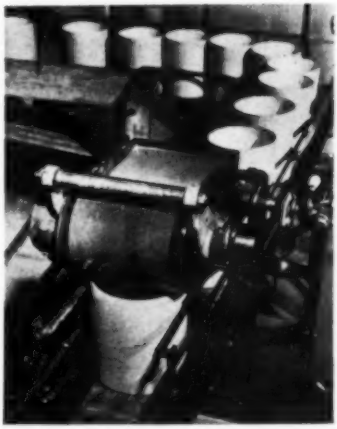
1) Improved quality of baked varnishes.
2) Speedier baking.
3) Effective reduction in fuel used.
4) Less operating attention required.
5) Greater safety.
6) More uniform results.
7) Reduction in handling time.

Making Paper Paint Cans

EMPLOYING kraft wrapping paper and non-critical materials in place of the tin-plated steel formerly used, the Sherwin-Williams Co. is now saving tons of steel daily, and getting a highly-satisfactory paint container through the use of a new continuous can-winding process perfected by the company's own engineers. The can-making plant, which converts rolls of ordinary wrapping paper into unbreakable, leak-proof cans, was equipped with second-hand machines and "home-made" conveyor lines in an unused portion of the company's Chicago factory.

Not only are the cans suitable for camouflage and blackout paints, and for tank, gun and airplane finishes, but they are also highly satisfactory for Kem-tone, the resinous emulsion base wall paint which the company recently perfected.

The cans are built up on a mandrel from layers of paper strips which are automatically fed and glued into a sturdy tube. Automatic cutters chop yard-long lengths from the tube as it comes from the mandrel, and other cutters chop these lengths into can-high cylinders. Top rim and bottom are automatically glued and crimped on. After a rotary pneumatic test to detect defects, the cans are ready for filling. Quarts and gallons are now in full production at the company's plant.



Conveyors carry the paper cylinders under an automatic gluer, which coats one end of each can-body with solvent-proof adhesive. Photograph: The Sherwin-Williams Co.

The Success of his Mission
REQUIRES DEPENDABLE AMMUNITION

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The safe, effective, economical way to prepare steel shell cases, shells and other steel ordnance parts for the protective finish.

The need for unusual protection of the finished shell case against rust in overseas shipment and use under severe climatic conditions, presents a new and serious problem to many manufacturers.

The best finishes available fail under severe exposure conditions if the surface on which they are applied is not clean chemically as well as mechanically, free from invisible rusters as well as visible rust. The DEOXIDINE process is admirably suited to the proper preparation of the metal to receive and hold a durable protective finish so necessary for "successful missions." The often overlooked, though important detail of proper rinsing in slightly acid solutions is accomplished with DEOXYLYTE as a part of the DEOXIDINE process.

DEOXIDINE meets U. S. Ordnance Department requirements in removing rust and neutralizing rust producers before protective finishes are applied.

ACP will help in guiding you in the proper preparation of steel shell cases, shells and any other ordnance parts to receive the specification finish. Descriptive literature will be sent on request.

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AMERICAN CHEMICAL PAINT CO.
AMBLER ACP **PENNA.**

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B-9

Dip-Coating 75 mm. Shells WITH THE AID OF Electrostatic "Detearing"

BY H. L. THOMAS

MANY plants throughout the country are manufacturing steel shells of various sizes for the armed forces. Naturally, with private industries and individual initiative in the ordnance picture, different equipment and methods have been developed and placed in operation for performing this essential war work. All of these steel shells receive a careful cleaning followed by a protective coating that must meet strict Government specifications and pass Government inspection.

In one of the large establishments that formerly manufactured automobile bodies, but which is now producing 75-mm. shells, a conveyorized dip-coating oven-baking set-up is in successful operation. Some views in the plant and a side elevation diagram of the dipping and "detearing" set-up are included in this article.

Several problems had to be solved in working out a dependable dip-coating operation that would coat the shells inside and outside, to give a coating of reasonably uniform thickness (not exceeding 0.0005-in.), with no fat edges or beads clinging to the lowest edges of the conveyor-suspended shells. Obviously it had to be a production

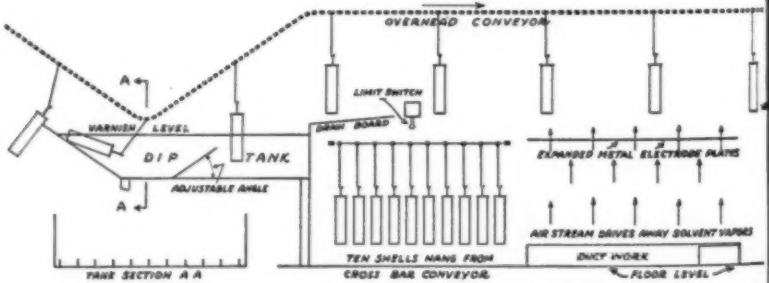


Fig. 1—This side elevation shows how shells tilt as they enter and leave the dip tank, how they pass over the drainboard and limit switch, and over the first unit of the electrostatic field.

A sectional view of the dip tank (looking in the direction of conveyor travel) is included to show the separator strips on the sloping entrance and bottom of the dip tank, to keep shells in line. Also a front section view of the ten shells hanging from the crossbar conveyor is shown here.

"THIS WON'T GET UNDER MY SKIN!" says the aluminum-protected plywood plane

A TRAINING plane doesn't mind how wet it gets—as long as the water doesn't get under the painted surfaces of wing and fuselage. For under-the-skin water can cause paint failure and raise the grain of the wood.

For that reason, many training plane manufacturers are using aluminum paint made of Permite aluminum paste or powder. Layer upon layer of overlapping aluminum flakes form an armor-like protective coating which moisture has great difficulty in penetrating. The results are shown in longer flying-life and better flying performance.

This is but one of many production applications of Permite Aluminum Finishes, including Ready-Mixed Aluminum Paints, where extra resistance to moisture, heat, fumes or oxidation is essential.

If you have finishing jobs requiring the special protective qualities of aluminum paint for wood or metal surfaces, write us for latest rulings of the War Department on supplying aluminum paints for war production requirements.

ALUMINUM INDUSTRIES, INC., . . . CINCINNATI, OHIO

PERMITE *READY-MIXED* **ALUMINUM PAINTS**

PERMITE *INDUSTRIAL* **FINISHES**

set-up that would assure satisfactory results, without excessive cost for operation or maintenance.

For anyone who may not be familiar with a 75-mm. shell, it is tubular in shape and closed at one end, except for a small central hole in the head. It is about 3-in. in diameter and 14-in. long, and the hole in the head is about ½-in. in diameter. The interior must be completely coated as well as the outside. These shells are given a single coat of baked-on synthetic varnish. The Ordnance Department has determined that a phenol-formaldehyde-resin varnish meets the strict specifications satisfactorily.

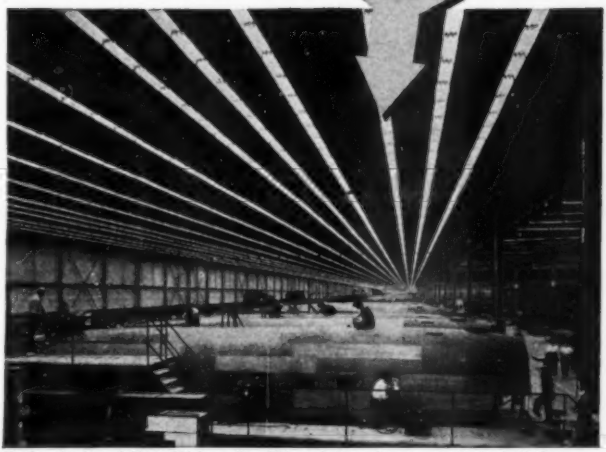
Overhead Crossbar Conveyor; Dipping Operation Is Thorough

Referring to the accompanying illustrations, the shells hang ten in a row from an overhead crossbar conveyor. The crossbars are spaced 30-in. apart on center. An expanding type of hook is inserted through the hole in the top of the shell and hooked to a long bent wire that hooks over the crossbars of the overhead conveyor. Although ten shells are spaced equidistantly apart along each crossbar, in the side elevation diagram the ten show as only one.

As you look at the diagram marked Fig. 1, you will notice that the shells tilt as they enter the dip tank. They tilt enough to make the head end of the shell lower than the open end, thus assuring a complete flow-in of varnish through the large open end. The shell also emerges from the varnish in a tilted position to allow a satisfactory flow-off of varnish from the top flat surface of the head. After leaving the dip tank, the conveyor line moves its load of shells over

Fig. 2—Here workers are transferring cleaned shells from conveyor-suspended racks to the crossbar conveyor which passes them through the dipping tank, over the drainboard and through two units of detearing equipment.

88% reflectance HERE means



The Douglas Aircraft Plant, Oklahoma City, Okla.—design and construction by the Austin Company.

A NEW HIGH IN BETTER LIGHTING

The newest contribution to better lighting is the development of fibre board fluorescent reflectors which, when finished with Polymerin*, have reflectance values of 87 to 88%—considerably higher than the standard for porcelain enamel! And accelerated testing, representing a year's use, shows a reflectance drop of less than half a point!

These wallboard reflectors are sprayed with A&W No. 17 White Surfacer, a primer which has excellent filling qualities and which does *not* require sanding. The topcoat is No. 52A High Reflectance Polymerin—a pure White Polymerin with a hard mar-resistant finish of superior reflectance value.

An ingenious, forward-looking answer to the unavailability of metal for reflectors, this new development is typical of results obtained when Ault & Wiborg chemists are given the opportunity to cooperate with manufacturers on their finishing problems. If you are seeking an improved finish—whether it's for a wartime or peacetime product—the most effective way to find it is to let us go to work on the problem with you *right now!* Time flies, you know, and it's never too soon to get started!

Ault & Wiborg Corporation, a Subsidiary of Interchemical Corporation, Empire State Building, 350 Fifth Avenue, New York 1, N. Y.

"In postwar planning it is conservative to be optimistic. If we are prepared for an early conclusion of this war, we can avoid an industrial Pearl Harbor."—Lyman Hill, Director of Sales Research, Servel, Inc.

AULT & WIBORG CORPORATION

Makers of Polymerin*—the original Speed-bake Finish

**Reg. U. S. Pat. Off.*

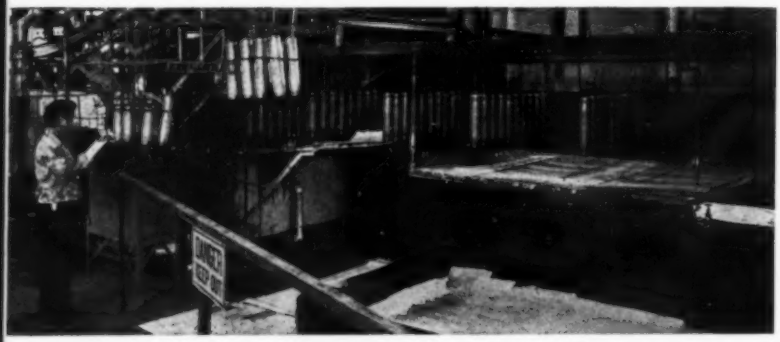


Fig. 3—Conveyors in the foreground are carrying racks of clean uncoated shells, but further back you see the dip tank, drainboard, loaded crossbar conveyor carrying dip-coated shells, and the first detearing unit.

a drainboard during which time the flow-down of excess varnish is completed and the coating that adheres to the shells becomes set and begins to dry.

Electric "Detearing" Equipment Removes Clinging Beads or "Tears"

Now we come to a special feature of the set-up which really makes dip-coating practicable for this type of work. It is the electric "detearing" equipment which, through a peculiar electric repelling action, removes and disperses the beads or thick accumulations of varnish that cling to the lowest edges of the dip-coated shells. As the dip-coated products pass through the high-voltage electrostatic field, the beads of varnish seem to partly disintegrate in mid air, leaving undamaged the thin film of varnish coating that adheres closely and properly to the metal.

In a paper on this subject, presented at a War Conference in Detroit, early this year, Mr. Harold P. Ransburg, inventor of the equipment, stated that:

"At this stage the sections from which the paint has been dripping, which we call 'drain-off points,' are subjected to a powerful electrostatic field which is designed to set up an attractive force between the grounded article and a high-voltage electrode which is properly spaced from the object.

"The interval of time between leaving the dip-tank and entering the electric field is not highly critical. The proper timing is dependent on the size and shape of the article, the flowing characteristics of the coating material, and the evaporation rate of the solvents in the coating material. In general, it can be said that this interval of time will be between one and four minutes.

"The electrodes are designed for the particular application involved, giving consideration to the speed of conveyor and type of article being treated. *It is essential that each drain-off point, from which excess material is to be removed, be exposed directly to the high voltage plates.* Any portion of the article which is electrically shielded

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The impressive record of Guardsman Finish and Guardsman methods for finish of ailerons and flaps for Aircraft Ambulances* shows these astonishing comparisons.

	Old Method	Guardsman Way
Number of Operations .	Thirteen	Eight
Man Hours of Labor .	94 minutes	56½ minutes
Elapsed Time for Finish	254 minutes	26½ minutes
Material Consumed . .	9 quarts	5 quarts

*Name of manufacturer on request.

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from the field is less effective directly in proportion to the extent to which it is shielded. The electrodes are of material that presents a relatively continuous electrical conducting medium (for example, panels of expanded metal).

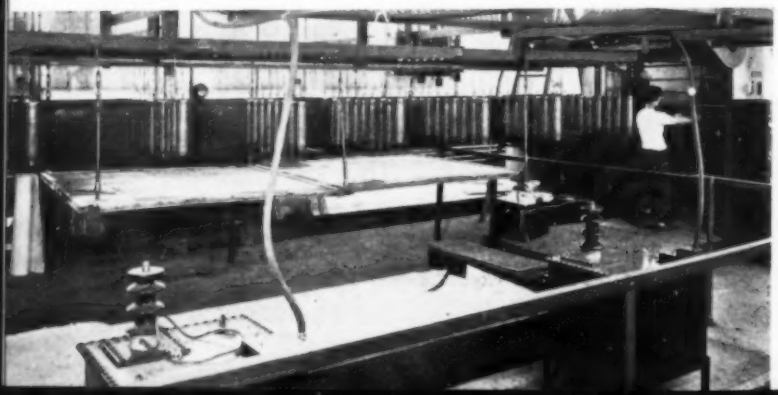
"The electric field is energized by a specially designed power pack which produces a half-wave direct-current voltage of considerable magniture but low power. This unit is so designed that on a short circuit it will not produce a current of more than 5-milliamperes. In a normal application it will operate at a value in the neighborhood of 200-microamperes at 85,000-volts. It is a self-contained, oil-immersed unit, with no moving parts. It requires a primary power source of 220-volts, 60-cycles, drawing approximately 3-amperes."

To dispel all solvent vapors that may be temporarily trapped within the dip-coated shells, and which may possibly tend to concentrate throughout the high-voltage electric field, a system of ventilation is provided whereby a fairly strong draft of air blows upward from grills and duct work located directly below the expanded metal electrode plates.

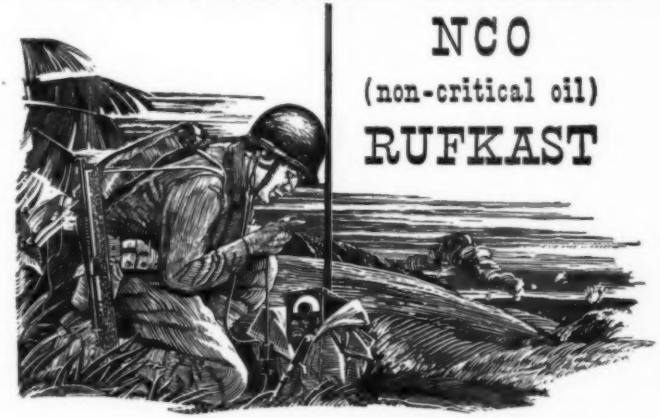
In the installation shown here, two sets of high-voltage electric fields and two sets of up-draft ventilation are included. They are arranged in tandem, about 5-ft. apart. This arrangement takes care of removing any beads of paint that may partially re-form at the lower edges of shells after passage through the first electric detearing field. This possibility can occur if the conveyor speed is slightly increased or if the flow-down and setting of the coating material are slower, or if certain other factors that affect the operation vary slightly. As a matter of fact, these detearing set-ups are designed and laid out to fit the particular dipping job in each individual factory. Each set-up is capable of considerable adjustment to meet changed conditions as to the products being dip-coated, the dip-coating material used, etc.

Following the detearing operation, these coated shells are transferred to another overhead con-

Fig. 4—In background the dip-coated shells, suspended from a crossbar conveyor moving from left to right, are passing over the second set of expanded metal plates which are negatively charged by high-voltage electricity from power packs in the foreground. The worker at extreme right is transferring shells to the oven conveyor.



A WAR CHALLENGE ANSWERED!



NCO
(non-critical oil)
RUFKAST

WPB said, "No more China wood or other critical oil for wrinkle finishes." ¶ The armed forces said to the paint industry, "We must have wrinkle finishes for vital instruments and equipment—finishes of low reflectance and less eye fatigue. What can you do?" ¶Berry Brothers research found the answer in NCO (non-critical oil) RUFKAST. ¶ Oil that formerly wrinkled poorly, now wrinkles freely and uniformly. Low reflectance values are preserved. Eyestrain is kept at a minimum. Bakes in convection oven, in full range of patterns — large, medium, or small. Gas oven fume resistance is excellent. ¶ Tendency to skin greatly reduced. ¶ Valuable knowledge and experience now being gained in the production of wartime finishing materials will be available for many peacetime needs. We will be glad to work with you on your new product plans.

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veyor which takes them through an oven wherein the varnish coating is baked at a temperature of 350° to 400° F. for 20 minutes. Shells can be hung much closer together on the oven conveyor, as they remain hanging in a perpendicular position throughout the baking cycle. As the shells leave the oven they pass through a cooling zone and are then removed from the conveyor and packed for shipment to ordnance plants where they are loaded.

Care for Your Fire Extinguishers

THE MANAGEMENTS of industrial and business establishments are urged, on the occasion of Fire Prevention Week, October 3 to 9, to give special attention to the care of first aid fire appliances.

The use of critical metals for the manufacture of new extinguishers has been greatly curtailed, and practically the entire output of the fire extinguisher industry is going to the armed forces and to war plants with top priority ratings. It will be impossible, in many cases, to replace damaged or obsolete standard fire extinguishers until after the war.

Underwriters' Laboratories, Inc., and the Factory Mutual Laboratories, which test and permit labels of approval to be placed on various types of extinguishers meeting their standards of design and performance, have adopted Emergency Alternate Specifications for certain types of extinguishers in an effort to relieve the situation. The spirit in which these specifications have been adopted is expressed in the following statement of the Underwriters' Laboratories, Inc.:

"National preparedness and defense, and now wartime controls of critical materials, have required use of various substitute materials and methods, some of which may not be acceptable after Victory, their replacement becoming a necessary part of the cost of war."

However, proper care of standard fire extinguishers that conform to the peacetime standards of the underwriters will keep them in good operating condition indefinitely. Enforcement of the following rules will prolong the usefulness of existing equipment:

1) Recharge extinguishers immediately after use and after the interval of time recommended by the manufacturer.

2) Use only recharging supplies and replacement parts obtained from the manufacturer.

3) Follow the instructions on the units closely when recharging all types of extinguishers.

4) Inspect extinguishers at least once a month to make certain they are filled, operative, and have not been tampered with.

5) If an extinguisher is damaged by a blow or fall so that there is a possibility that the shell or seam has been damaged, have the extinguisher tested by the manufacturer or his agent.

6) Do not attempt repairs of damaged extinguishers. Return them to the manufacturer for the skilled work such service demands.

7) Have men on the premises who are familiar with the inspection and recharging of extinguishers, and who understand the correct methods for keeping the equipment ready for instant, efficient use.—SAFETY RESEARCH.

See that every precaution and safeguard against fire is operative.

U. S. Navy Official Photos

Of Course We Have It!

THAT NEW AMMUNITION PRIMER (U. S. Ordnance Dept. "Spec" AXS-946) for Steel Shells, Bombs and Cartridge Cases

Meets every requirement—yours and Uncle Sam's. Top speed and economy in the finishing department, full surface protection to the ammunition. The chances for corrosion to mar the effectiveness of our calling cards for Hitler and Tojo are greatly reduced when they're finished with EGYPTIAN Primer AXS-946 and top coated with EGYPTIAN enamel,—lacquer or synthetic.

This red EGYPTIAN priming coat developed to meet "Spec" AXS-946 may be applied to the bare metal by spray, brush or dip. When applied by spray it air dries in ten minutes for handling and top coating with enamel. If desired it may be baked for ten minutes at 250° F.

You can depend on EGYPTIAN alertness to meet new and revised Government Specifications, just as you can depend on the quality of every EGYPTIAN FINISH.

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***Superior* FINISHES**

Portable Infra-Red Units

INFRA-RED lamps for drying have found their chief application in large installations where the lamps are not moved—in drying tunnels and similar layouts—but their usefulness is not restricted to such applications. Portable infra-red units offer many possibilities along this line. One portable unit, for example, has three rows of lights arranged in a bank on a horizontal axis. This portable unit is mounted on casters so that it can be readily pushed to any place in the room.

The arrangement is such that the lamp assembly can be tilted on its horizontal axis to suit the drying job at hand. Vertical adjustment permits of placing the lamps anywhere from 12 to 96-in. above the floor. The top row has four lamps, the center row five, and the bottom row four. Individual switches are arranged, so that only four lamps can be used if desired; or nine lamps, or the entire bank of 13 at any given time.—W. R.

Heating Contents of Dip Tanks

WHERE paints or varnishes are applied by dipping, it is generally necessary to keep the material in the dipping tank at a uniform temperature for really good results. Electric immersion heaters are often the best answer to the problem.

In one case where an asphaltum compound is used, room temperature was formerly depended upon to keep the compound in the proper condition. But room temperature varied, and the finishing results varied with the temperature. Then electric immersion units of low-watt density were installed. These are thermostatically controlled. They maintain the coating compound at the correct viscosity to insure a permanent bond, a uniform thickness of coating, and an attractive outside finish after baking. The heating units are fitted with two blades to distribute the heat rather than localizing its entry into the material. Thus, all possibility of carbonizing or charring the compound is prevented.

C. C. Helmle Joins Enthone Company

The Enthone Co., New Haven, Conn., announces that on August 16th Clarence C. Helmle joined the technical staff of the company. Mr. Helmle, a chemical engineer, is a graduate of Rensselaer Polytechnic Institute, class of 1932. He was successively plating analyst, chemist, and finally head of of the Inorganic Laboratory in charge of electroplating, metallurgy and general chemistry for a large company.

Mr. Helmle is a member of the Electrochemical Society and was an instructor for several years in chemistry, electrochemistry and metallurgy at the Bridgeport Engineering Institute. He has contributed ten articles to electroplating literature.

Mr. Helmle will be engaged in plating equipment design, process development and technical service.

Aluminum Industries, Inc., Honored Again

Aluminum Industries, Inc., Cincinnati, Ohio, manufacturers of Permite aluminum and magnesium alloy castings, steel parts, paints and automotive replacement parts, announces that a white star has been added to the Army-Navy "E" flag now flying over its plants.

The flag, awarded for excellence in war production, was presented last autumn. The white star signifies, according to a letter received by the company from Under Secretary of War Patterson, that during the period following the flag presentation the high standards of production, for which the "E" flag was originally awarded, have been maintained.

DESPATCH HAS THE ANSWER!

Completely revolutionary in every detail, Despatch's spectacular *new* line of finish-baking ovens is purposely designed to answer *all* requirements—for speed . . . improved quality . . . automatic operation . . . greater economy . . . use of floor space.

Employing radically different mechanical devices and electronic equipment, these ovens represent Despatch's greatest advance in 41 years experience in this field. And the greatest departure from older methods in baking.

Free! **Plant Layout Service**

Let a Despatch engineer prepare a post-war layout for **your** plant now.

His recommendations will help you hold your own in tomorrow's markets.

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TO keep them tough and powerful, our fighting weapons need thorough-going protection against the elements, whether they be the desert's sand and sun or the wind and spray of the ocean. And manufacturers have found the fastest way to apply that protection is with DeVilbiss Equipment.

Here's how one DeVilbiss Gunner at Consolidated Aircraft Corporation helps to build the resistance of a bomber's "prop". And at The Autocar Company, "half-tracks" and tank destroyers are given paint conditioning by a crew of DeVilbiss Spray Gunners.

Whatever your war product may be, you need not sacrifice quality on those essential painting and coating operations to get more production speed. DeVilbiss Spray Systems are today setting the pace for high-speed, high-quality finishing on war work ranging from coating the tiny filaments of radio tubes to painting huge transport planes. Perhaps DeVilbiss can help beat present delivery schedules on *your* war work, too.

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PROUD to have won the coveted Army-Navy "E" for excellence in war production, the men and women of DeVilbiss pledge to continue giving their all-out best—for Victory.

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weapons

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Without the *right* ammunition and plenty of "know-how", the best gun in the world is useless—in winning battles or solving tough finishing problems.

Fitting the finish to the job, and especially to the production setup, is one thing we do exceptionally well here at the Liquid Plastics Division of Ferro. First of all, we make *only* industrial finishes and war paints. Secondly, we concentrate on *quality*, not quantity . . . hence are able to devote much of our time to laboratory work and experimentation.

Let us help you on your next difficult finishing job.

Vedoc

LIQUID PLASTICS DIVISION
FERRO ENAMEL CORPORATION
CLEVELAND, OHIO

Special Coating Aids Magnetic Inspection

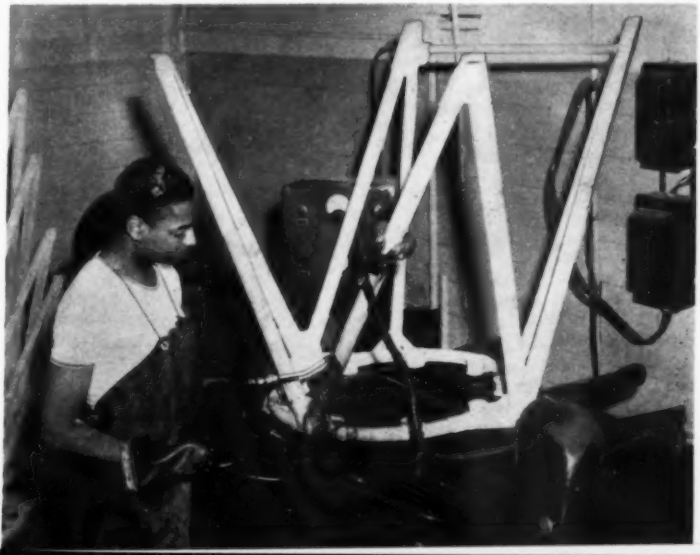
This synthetic white primer coat replaces cadmium plating to supply light-colored background needed for magnetic inspection of steel parts for aircraft, to find out if any hidden flaws are in the metal.

BY G. C. CLOSE

ORGANIC finish has stepped in to fill many a breach caused by material shortages since the outbreak of the war. A recent development, however, rather exceeds the bounds of ordinary substitution in that an organic finish was called upon to perform a function both peculiar and new.

It has long been the practice to give all articles to be magnetically inspected a flash coat of cadmium to serve as a light-colored background material against which the magnetic indications would stand out sharp and clear. When the government issued orders to conserve cadmium, this practice

This picture shows the magnetic inspection of an organic-finished engine mount.



became an unwarranted use of a critical material. In no manner of thinking could the flash coat of cadmium be considered essential. It neither entered the finished product, nor served any purpose other than to expedite the inspection process.

What Magnetic Inspection Is

For those interested yet unacquainted with magnetic inspection, a brief description of the process will aid in making this article clear. Magnetic inspection is limited to iron or steel parts that can be magnetized. The process consists of sending a heavy charge of electricity through the part, while at the same time wetting the part with a liquid petroleum suspension of finely divided ferromagnetic particles. If there is a crack, inclusion, or other defect in the part being tested, this defect will interrupt the flow of the electric current and create a localized magnetic field in the area of the defect. The fine ferromagnetic particles in the liquid petroleum will then be attracted by the magnetic field and congregate in the area of the defect, revealing its location to the inspector.

Before parts are magnetically inspected, they are sand-blasted to remove heat-treat scale and other surface impurities that might in themselves cause indications to appear. The dull gray sandblasted surface is a poor background against which to observe the magnetic indications. A flash coat of cadmium, as previously mentioned, improved the background materially and, until the order to conserve cadmium was issued, no serious thought had been given to finding a suitable substitute for this important service.

Several factors had to be taken into consideration when the search for a new background material was instigated. It was necessary to find a material through which the electrodes of the magnetic testing machine could make contact with the part being tested. It was also imperative that the coating used be not affected by the liquid petroleum suspension medium employed in the magnetic inspection process. Other factors were ease of application, drying time of coating material, and availability.

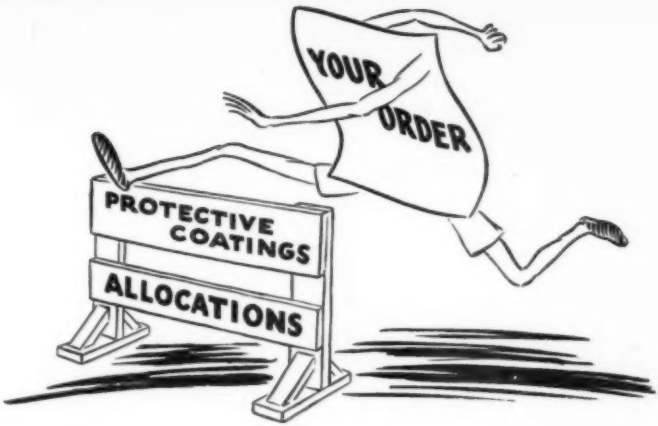
Metal Dyes Were Tried and Comparisons Noted

Metal dyes came naturally to mind. Parts known to be defective were first given a flash coat of cadmium to accurately locate all defects; then they were re-sandblasted and dyed various hues. Trouble developed immediately. The electrodes would not make satisfactory contact through the dyed surface; the liquid petroleum dissolved part of the dye; the dye color itself was only partially effective as a background material, due to its semi-translucent character. A series of tests using dyes and cadmium flash coat revealed that the inspectors would note approximately 50% more defects with the cadmium than with the dye method.

Synthetic White Primer-Surfacer Meets All Requirements

It was then decided to try an organic finish as a background material. Using past experience as a guide, a synthetic type of white primer-surfacer, properly thinned, was selected for the experiment.

Parts were prepared, given a flash coat of cadmium, and the



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Sterilizers
Gun-fire Controls
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Sound Detectors
Ammunition

Allocation requests to use critical raw materials, necessary to practically all protective coatings, must be filed by manufacturers of finishes with the W.P.B. on specified dates the first two weeks of each month. These requests cover orders to be shipped the following month, and must be filed even though the manufacturer may have the raw material in stock.

Though allocation requests are based on orders received as well as anticipated business, the scarcity of raw materials has recently resulted in authorization being granted *only for orders actually on hand.* End use, of course, must be sufficiently important to justify release of the raw material.

From this you will see that the receipt of your order by the ***1st of the month,*** enables the manufacturer to include your requirements in that month's allocation requests. Failure to meet this time schedule may mean a full month's delay.

Orders should specify end use, contract number, specification and priority data, delivery date, etc. In this way we will be able to give you the best service possible.

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A three-tier Binks Water Wash Spray Booth now in use finishing giant bombers

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WHEN BINKS ENGINEERS designed and installed the giant water wash spray booth to the left in one of the country's largest plane plants, it was only one part of a complete finishing department. To finish the countless small parts that make up the finished plane, a complete small parts department was included. The views to the lower left and below illustrate the comprehensiveness of this Binks Spray finishing installation. Clean, fresh air is delivered to this department in slightly greater quantity than it is exhausted, thereby eliminating the problem of dust and dirt filtering into the room. Every piece of equipment is engineered for speedy, high-quality finishing.

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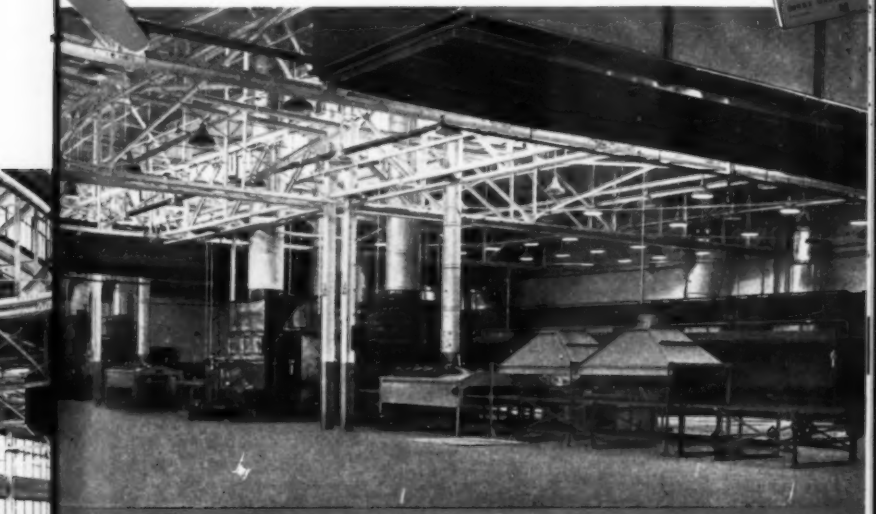

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number of defects were noted. The cadmium was then sandblasted off and the parts were given one light misty spray coat of the primer-surfacer. After drying, all parts were again tested and the number of defects noticeable against the primer-surfacer were compared with the number that had been noted against the cadmium flash coat.

Results were beyond all expectations. The number of defects noted against the primer-surfacer compared very favorably with those noted against the cadmium. The magnetic indications stood out sharply against the white background. The electrodes of the testing machine made perfect contact through the thin film of primer-surfacer. The organic finish was unaffected by the magnetic inspection liquid.

This process lends itself readily to industrial application. No equipment other than a spray gun and booth are required. There is a minimum of time and labor involved. Parts to be subsequently finished by electroplating must have the organic finish removed by sandblasting, but the primer-surfacer film may be retained as a prime coat when parts are to receive a final organic finish.

What Precautions to Observe; This Beats Electroplating

The process is not complex. However, a few specific requirements must be recognized. All parts must be sandblasted clean before spraying, and the primer-surfacer must be applied soon enough after sandblasting to prevent rusting or the formation of an oxide film over the surface of the part. At least an hour should be allowed for the part to dry. A very light application will give the best results. The primer-surfacer should be so thinned that the appearance of the fresh film is wetly translucent without strong evidence of pigmentation. Such a film, when dry, will be sufficiently white for the intended purpose.

Though developed as a stop-gap measure, the results obtained hint strongly that organic finish has developed a new and permanent use for itself as a background coating for the magnetic inspection process. When cadmium is again plentiful, there will be little incentive to return to its use. The flash coat process is slower and more costly in all respects than the application of the organic film. Companies desiring to do magnetic inspection, but not equipped to do electroplating, can save costly sub-contract work by adopting an organic finish to solve this inspection trouble.

Alvey-Ferguson Co. of California

The Alvey-Ferguson Co. of California has been formed, with sales offices, engineering and manufacturing facilities at Slauson and Santa Fe Ave., Los Angeles, Calif., for the purpose of manufacturing and selling conveying equipment and metal products cleaning and finishing equipment similar to the products which are now manufactured by The Alvey-Ferguson Co., Cincinnati, Ohio.

This move was made necessary, according to John C. Walter, president of the new company, because of the great industrial expansion of the west. Mr. Walter is also head of The Alvey-Ferguson Co., Cincinnati, Ohio, manufacturers of conveying equipment and metal products cleaning and finishing equipment, and recent winner of the coveted Army-Navy "E" Award.

In addition to having its own sales staff, The Alvey-Ferguson Co. of California will also be represented on the West Coast by Peter D. Bowley & Associates, with sales offices at 2132 Hillhurst Ave., Los Angeles; 369 Fifth St., San Francisco; 3150 Eliott Ave., Seattle; Terminal Sales Bldg., Portland.

BETTER GRIPPAGE

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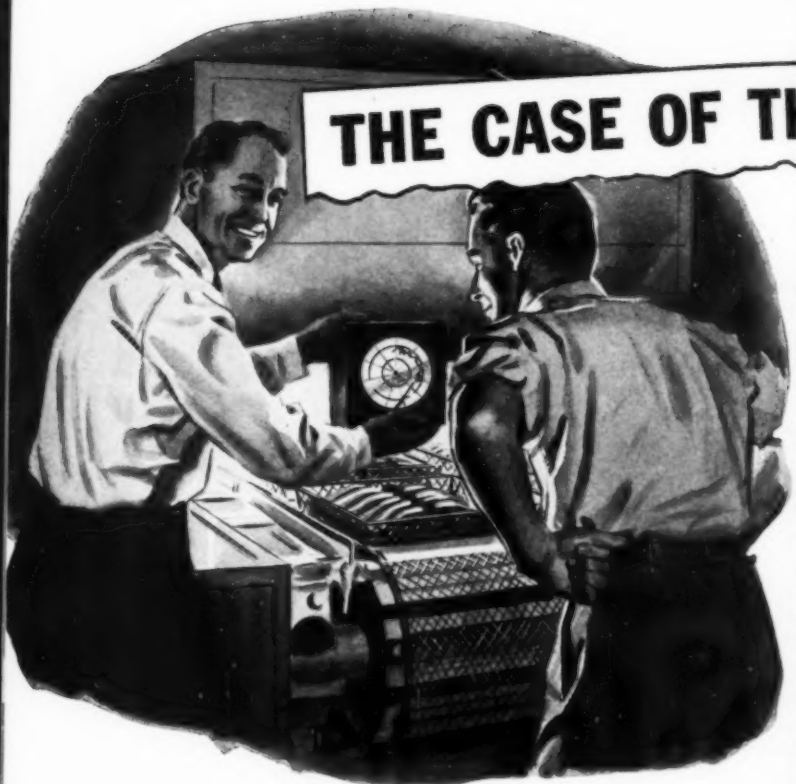

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Handy pocket-size, fully illustrated booklet, *"Hints on Wartime Finishing Economies."* Shows you 11 points to check for greater efficiency and speed on your war contract finishing schedules.

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Check here for the help of Du t War Service Men—skilled "tro shooters" to straighten out "ki in your finishing system *befo after* the trouble occurs. T "know-how" is at your dispos any war contract finishing. W about your trouble. Or wi case of emergency.

THE HALF-BAKED TOPCOAT

Or How a Du Pont war service man turned on the heat and cured a blister

ESTIMATES are made. Contracts are signed. Finishing specifications are submitted. But there still remains the tough task of meeting those specifications and passing extremely rigorous tests. It isn't always easy.

A good illustration of this is the manufacture of marine installations whose chief finishing worry was: would it resist moisture? Samples sent to Du Pont for humidity tests failed repeatedly. The finish seemed hard and practically perfect. Yet, under test, it would invariably blister.

A Du Pont War Service Man visited the plant to see what was wrong. His skill and long experience in troubleshooting enabled him to make a diagnosis almost immediately.

He knew that often a finish may appear thoroughly hard and dry yet the resins may not be polymerized to the degree required to resist high humidity. Checking the oven with a portable thermometer, he found the temperature correct. He surmised that the trouble might be poor oven-ventilation.

This proved to be the case. Dust had accumulated in the exhaust stacks. When these were cleaned and samples were again sent to Du Pont for testing, the finish came through with flying colors. Because it had been thoroughly *cured* as well as *dried*, it came out of the humidity test cabinet just as smooth, and hard, and dry, and uniform as when it went in.

And so, once again, a Du Pont War Service Man put his finishing "know how" to work expediting production on the industrial front. Why not let him help find the answer to *your* finishing problems? E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington, Delaware.

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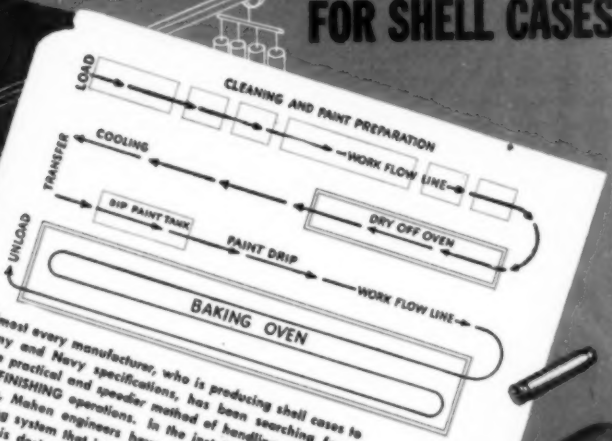

Almost every manufacturer, who is producing shell cases to Army and Navy specifications, has been searching for a more practical and speedier method of handling CLEANING and FINISHING operations. In the installation diagrammed above, Mahon engineers have developed a cleaning and finishing system that is readily adaptable to any plant layout. It is designed not only to expedite production but to do it with less handling and at less expense. The several stages of—cleaning—processing—drying—painting—baking have been expertly engineered and co-ordinated into a compact, close-coupled system that speeds the work through in a steady, continuous flow. No lag. No production slowdown.

It is to the advantage of every shell case manufacturer to know the complete particulars of this Mahon development. Phone—wire—or write—without delay.

HANDLES ANY SIZE CASE

This Mahon Finishing System can be adapted to handle the production of any size shell case—from smallest to largest.

THE R. C. MAHON COMPANY

DETROIT CHICAGO

Designers and Manufacturers of Metal Cleaning Machines, Rust Proofing Machines, Hydro-Filter Spray Booths, Ovens of All Types, Filtered Air Supply Systems, Hydro-Foam Dust Collectors—and Many Other Units of Special Production Equipment—Including Complete Finishing Systems

I am enclosing for your consideration the article mentioned in my letter of July 23nd, entitled, "Fundamentals of Corrosion and Control."

I have tried to follow your suggestions and have kept the article short and as simple as possible. I hope that it meets with your approval and that you will find it possible to use it in a future issue of your magazine.

Jerome M. Bialosky

FUNDAMENTALS OF . . .

Corrosion and Control

By JEROME M. BIALOSKY, B.S., Ch. E.

THE annual loss of iron and steel in the United States, due to corrosion, has been estimated to exceed 1,500,000 tons. In war time this loss of material is a luxury which we cannot afford. It is important that the finishing industry understands the principles which control corrosion, so that this waste may be reduced to a minimum.

The accepted theory of corrosion may be stated simply as follows: All metals tend to go into solution with an equivalent amount of hydrogen being formed. This action is accomplished by a transfer of electrons or negative charges. This transfer of electrons is a flow of electric current.

The amount of corrosion is proportional to this current. The presence of a film on the metal, which impedes the current flow, will reduce the amount of corrosion. Each individual metal or alloy will have a different tendency to go into solution. Thus some will be more resistant to corrosion than others.

This action will occur in the presence of water or water vapor, which may condense on the metallic surface. Where dry gases are corrosive, the action is of a direct chemical attack, with the formation of oxide or sulfides as the products of corrosion.

Forms of Corrosion

Corrosion presents itself in various forms. Recognition of the type of corrosion will indicate the real primary cause and a means of overcoming the trouble.

Pitting or perforation is the most common form of corrosion failure. It occurs in neutral or nearly neutral solutions, i.e., neither acid nor alkaline. It is caused by non-uniformity of any one or more of the following: Concentration of the solution with respect to dissolved solids or *dissolved oxygen*, rate of flow, temperature, base metal composition or strain. Because of the many possible factors involved, this type of corrosion is difficult to control.

Direct chemical attack is found

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PHOTOS COURTESY THE WHITE MOTOR CO.

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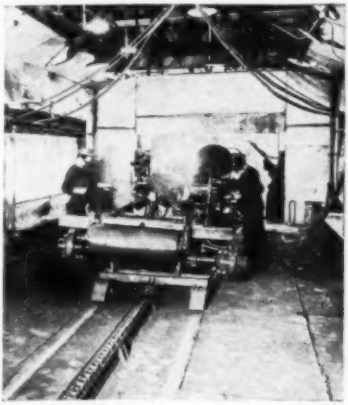

PAINT SPRAY BOOTH at the White Motor Company, scout car chassis is being sprayed with S-W Lusterless Olive Drab Enamel.

ONCE SPRAYED, THE CHASSIS passes through this infra-red drying "oven". In eight minutes the finish is "Baked" and the chassis moves on.

TESTED ON EVERY FRONT, SHERWIN-WILLIAMS FIGHTING FINISHES ARE USED BY WHITE MOTOR-BUILT SCOUT CARS, TANK DESTROYERS

It is no accident that the White Motor Company uses Sherwin-Williams finishes on Army Scout Cars and Tank Destroyers. White executives knew Sherwin-Williams finishes would meet rigid Government Specifications ... give sure protection in action and in transit.

They knew, too, that they could count on the help of Sherwin-Williams Paint Engineers ... experts in working out finishing methods to meet new wartime demands.

You may have a finishing problem in mind now or you may want information on the latest finishes for wartimeuse. Whichever it is, consult Sherwin-Williams first. Write, or telephone today.

INDUSTRIAL FINISHES

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in acid or strong alkalis. It is indicated by a uniform loss of metal on the exposed surface.

Dezincification of certain types of brass, and intergranular corrosion, are caused by a selective action of the corroding liquid upon the alloy. This attack is limited to one phase of the alloy. The result is a considerable weakening of the metal without much change in dimensions. The cause of this form of corrosion may be either the wrong choice of material or improper heat treatment. The latter is more prevalent in stainless steels which are welded.

Rate of Corrosion

The rate of corrosion is the most important factor in determining the proper metal to use for a given set of conditions. It is necessary to balance the initial cost and replacement cost against the service life, availability of materials and ease of fabrication, in order to determine the most suitable material. The actual rate of corrosion can best be determined by test.

The corrosion rate will vary with changing conditions. The most important variables are described here.

Choice of metals will be controlled by corrosive conditions. Resistance to corrosion in water or weak salt solutions of the commonly used metals increases in the following order: Magnesium, aluminum, zinc, cadmium, steel, cast iron, tin, lead, nickel, brass, bronze, copper, stainless steel, silver, gold. This order is approximately correct, but presence of dissolved oxygen or chlorides may change the relative position of some metals.

Where two different metals are used in contact with each other, the least resistant metal will be corroded more rapidly and will tend to protect the more resistant metal. This is known as anodic protection. Thus from the above list, we notice that zinc (electroplated or hot dipped) will protect steel, the zinc being corroded in preference to the steel. Due to the formation of films on the zinc, the corrosive action is reduced to a low rate, which permits the economical use of galvanized steel.

Where more resistant metals are used as a coating for steel, the protection is cathodic. Any pinholes in such a coating will accelerate the rusting of the steel exposed; therefore, pore-free deposits are required of copper, nickel and other more resistant metals on steel.

The formation of tightly adhering continuous films will shield the metal from further attack. These may be formed by the reaction of dissolved solids or gases with the metal, or may be the products of corrosion. Oxide films are produced on aluminum and stainless steel, where air is present, while a sulfate film forms on lead immersed in sulfuric acid. These films are continuous and are self-healing. Loose, brittle films may cause local action and cause premature failure due to pinholes.

Depends Upon Several Factors

The rate of attack usually increases with increasing acidity of the corroding solution. Notable exceptions to this rule are concentrated acetic acid on aluminum, concentrated nitric acid on steel and aluminum, and strong sulfuric acid on lead. The reason for the slight attack in these cases is due to the formation of insoluble films mentioned previously.

Oxidizing agents and dissolved air or oxygen will cause high corrosion rates, except where they promote the formation of tight con-

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tinuous films on the surface of the metal, as on aluminum and stainless steel.

Rapid movement of the corroding liquid over the surface of the metal will mechanically remove loose films and hydrogen, and continuously exposes bare metal to the action of the liquid.

Increasing the temperature will increase the rate of corrosion. Every rise of 50° F. will approximately double the action.

Protective Coatings

Many of the factors controlling corrosion depend upon conditions which cannot be controlled by the finishing industry. However, the finisher has the responsibility for properly cleaning and applying any protective coating specified by the customer.

The protection offered by metallic coatings has been described in preceding paragraphs. The degree of protection depends upon the thickness and freedom from porosity.

Organic coatings produce a film on the surface of the metal, which prevents or retards corrosion. Such coatings may be paints, varnishes, lacquers, waxes, tars or oils.

The past few years have produced a number of blackening processes. These are oxide or sulfide films and, for suitable corrosion resistance, such films are usually oiled.

Additional Information Available

In this article I have tried to present the fundamentals in simple terms. However, the reader will realize that corrosion is not a simple process which can be controlled easily. There is no universal cure for all corrosion troubles. For those readers who desire more complete information, the following sources are suggested:

Corrosion, Causes and Prevention.
F. N. Speller

Corrosion of Metals.....U. R. Evans

Corr. Resis. of Metals & Alloys.
McKay & Worthington

Protective Coatings for Metals.
Burns & Schuh

Publications of—

International Nickel Co., Inc.
Republic Steel Corporation
American Brass Company
Carpenter Steel Company

C. T. Ruhf Elected President of Mack Trucks, Inc.

Mr. C. T. Ruhf was elected president of Mack Trucks, Inc., at a regular meeting of the board of directors. He has been with Mack since 1912. Mr. Ruhf had been executive vice-president of Mack since last January, following the death of E. C. Fink, former president and board chairman. Prior to that time he had been operating vice-president in charge of factories.

C. T. Ruhf, now President of Mack Trucks, Inc., came up from assistant to a factory manager.

In 1920 Mr. Ruhf was appointed assistant to the factory manager of the Allentown plant, in which position he served until appointed factory manager in 1937. In 1938 he was made operating vice-president in charge of production at the company's plants in Allentown, Pa., Plainfield, N. J. and New Brunswick, N. J. In this capacity he supervised the building of the heavy-duty motor trucks and prime movers Mack is now supplying the armed forces and also the huge Mack-built transmissions used in many of the Army's 30-ton tanks. The announcement of Mr. Ruhf's election, as president, was made by Mr. Louis G. Bissell, chairman of the board of directors.

What the Eye Admires The Heart Desires . . .

Civilian products, scarce as they are, require more than a protective coating. Beauty of finish is as important as ever . . . competition still exists . . . and eye-appeal still plays a vital part in consumer acceptance.

We invite you to use the facilities of our Creative Studio where the practical is combined with the beautiful in developing finishing schemes for all sorts of products in wood or metal.

If your production is now limited to war products, we are supplying protective coatings that meet all U. S. Government specifications.

Your inquiry will receive our prompt attention.

No Tampering with Quality

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ROCKFORD, ILLINOIS

Manufacturers of Protective and Decorative Coatings

Sealing Structural Parts of Aircraft

How to properly seal important structural joints in the sub-assemblies of aircraft, so they will remain elastic and water-tight or gasoline-tight, is a big finish problem, too.

BY G. C. CLOSE

THE various sealing compounds, though of vital importance to many industrial processes, are not generally employed extensively enough to warrant the supervision of a specialist trained exclusively in their use. Because most sealing problems parallel and are often associated with painting or finishing problems in many establishments, the responsibility for sealing operations falls directly on the shoulders of the finish technician or finish engineer. This does not mean that sealing problems are less complex. A good sealing job requires a fund of solid common sense and a wide familiarity with the many sealing materials available.

The aircraft industry, in particular, presents sealing problems of various and complex nature. Because today thousands of companies are engaged in the production of aircraft parts and sub-assemblies, it will not be amiss to confine this article to the single function of explaining the various methods employed in making aircraft structural sub-assemblies watertight and gasoline-tight.

Aircraft Sealer Must Stay Elastic, Hot or Cold

Let us examine first certain fundamental difficulties that stand in the path of adequate aircraft sealing practices, and the various types of sealers that will be required to overcome such difficulties.

Every airplane is subjected to extreme variations of temperature, to rigorous vibration, and to various atmospheric pressures at different levels of flight. With such factors in mind, it becomes at once apparent that any sealer used must maintain elastic properties at both ends of the temperature scale, while at the same time being sufficiently adhesive to maintain good bond and resist cold-flow under pressure.

The design engineer can aid materially in the final production of a good sealing job. Airplanes are constructed of thin-gauge, pliable material, and most seams that will require sealing are of riveted construction. To make effective sealing possible, riveted seams must have the rivets close-pitched and driven at low stress to prevent bulging between each driven rivet. Joggles in seams are very difficult to seal. Structural members passing continuously through bulkheads offer another problem. By keeping

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Brush and Spray Clear Lacquer which accentuates Natural Wood Markings

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such troublesome factors in mind, the design engineer can make subsequent sealing a much more simple process.

In-built Gasoline Tanks; Wings; Floats; Hulls

The structural parts of an airplane most frequently requiring sealing are in-built gasoline and oil tanks, wings, floats, hulls, and the sealed cabins of high-altitude flyers. Such structural parts are vital, and faulty sealing, if not resulting in actual failure and danger to airplane and crew, is sure to allow moisture penetration, lodgement, and subsequent corrosion.

In-built oil or gasoline tanks, a development to utilize the primary structures as a part of the tank and so reduce weight, offer a real sealing problem. Any sealer used must be resistant to gasoline, oil, and water, as well as having all the desirable characteristics previously mentioned. One method of sealing such tanks is to use a strip of fabric impregnated with a sealing compound, such as one of the Bakelite varnishes, or a new synthetic rubber compound on the order of Thiokol, Neoprene, etc. The impregnated fabric is laid in the seam, and the seam is riveted. Though impregnated fabric works satisfactorily on straight seams, difficulties are often encountered at sharp turns or joggles.

Ribbon of Zinc Chromate Paste Is Popular

Another method of sealing tank seams, and one now coming into prevalent use, is the application of a ribbon of zinc chromate paste along the seam just prior to riveting. This method involves no fabric strip. Using a spreader, an even ribbon of the paste is spread along the joint to be sealed. This ribbon should be kept thin enough to prevent excessive exuding of the paste when the seam is drawn tight.

Primary members penetrating the bulkheads of the tanks should be filleted with light castings, and the faying surfaces of casting, bulkhead, and member should be thoroughly sealed by an application of the paste. Zinc chromate paste is used also in the sealing of other seams where complete exclusion of moisture is imperative.

Synthetic Rubber Has Merits as a Sealer

When seams are subjected to extreme vibration, the best type of sealer to use is a synthetic rubber in the form of Neoprene. Neoprene is available in both liquid and in solid forms. The metallic faying surfaces of the seam are painted with the liquid synthetic and allowed to air dry. A solid strip of the synthetic is then placed between the coated faying surfaces, a second wet coat is applied to the faying surfaces, and the joint is drawn tight.

The second application of wet synthetic will seal the coated faying surfaces to the solid strip, and a well-bonded solid layer of sealing material will result. The elasticity of the synthetic will effectively absorb vibration and resist any shock loading that is liable to occur. The rivets used in the fabrication of such seams should be dipped in liquid synthetic prior to driving.

Impregnated-Fabric Method of Sealing

Many methods are used in making wings, hulls and floats watertight, but the impregnated-fabric method occurs most commonly and gives excellent results. Certain standards of workmanship must be maintained, however, or trouble is liable to develop. *(To page 58)*

To Better Your Chances against the Growing List of Critical Materials

TURN TO GLIDDEN

Are the widening shortages of some ingredients of enamels, varnishes and lacquers a threat to your wartime finishing? To meet them, invite the help of an organization with broad knowledge, experience and great resources. In the paint industry it's—Glidden.

Glidden has unusually extensive finishing "know-how"—gained through *years* of specializing in the formulating and producing of finishing materials used by industry "everywhere on everything".

Glidden has eight plants and laboratories strategically located from coast to coast. By pooling their results, each Glidden plant offers the facilities and experience of not one, *but eight,* paint laboratories.

In its 73 years, Glidden has not only accumulated a vast storehouse of manufacturing knowledge but, in addition, has acquired tremendous resources of raw materials.

All this is available to *you*—just ask for it.

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When the impregnated fabric method of sealing is used, it is necessary that the fabric be fully impregnated. Dry spots will not only fail to seal, but will act as a wick to accumulate moisture. Such moisture, held in contact with the metal, is sure to cause corrosion.

When impregnating the fabric, it is best to immerse it completely in the sealing compound, then wring it tightly to assure complete penetration of the sealer into the very fibers of the cloth. The fabric is then placed between the faying surfaces of the seam, and the seam is drawn tight. Enough residual sealer must remain in the fabric to exude slightly when the seam is fabricated. If no exuding occurs, a good seal is doubtful, and the seam should be re-fabricated.

Several types of fabric including canvas, felt, flannel and similar materials may be used. The sealing compounds are usually a synthetic-resin base, spar varnish or marine glue material. Choice of combinations may be governed by availability and experience.

Testing Sealed Joints to Prove Their Effectiveness

Every sealed structure that involves the safety of an airplane should be thoroughly tested prior to flight. This is a specification requirement for aircraft intended for the Services. Air pressure, controlled by a manometer or U-tube, is the testing medium. The pressure is raised to a specified amount as recorded by the manometer. Then, without additional supply of air, the pressure must remain constant for a predetermined interval of time.

Indications are that sealing will become more and more important in the aircraft industry. The development of more and larger substratospheric planes is inevitable. When Herr Hitler is made to realize that he should have kept on mixing paints instead of mixing in World affairs, when aviation has returned to normal, big skylines will carry many passengers through air that is thin, blue and very cold. Brethren of the pigments and oils, the cabins of planes like that will have to be *sealed!*

DeVilbiss Spray Classes Oct. 18 and Nov. 15

The DeVilbiss Co., Toledo, Ohio, announces that its autumn sessions, conducted especially for industrial spray painting operators, will begin Oct. 18, and Nov. 15. The Training School is open without charge to all applicants using DeVilbiss spray-painting equipment in their work.

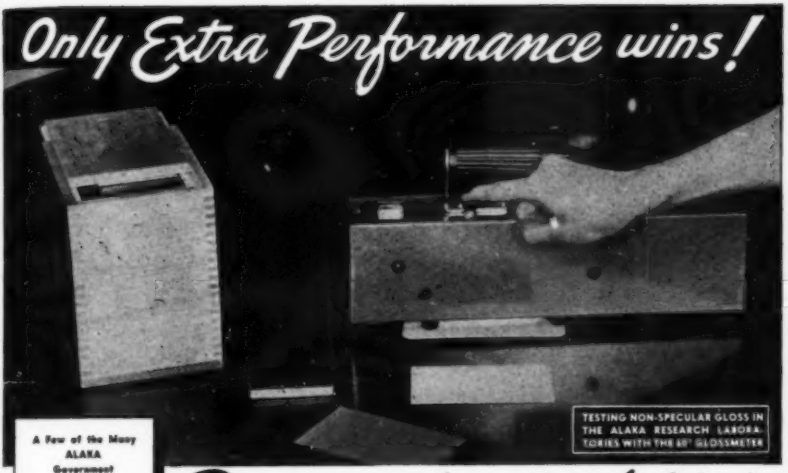
The course will cover all phases of spray painting in application to industrial finishing, with classroom instruction and shop work conducted by spray-painting experts. Companies and individuals may secure additional information and make reservations by writing to The DeVilbiss Co., Toledo 1, Ohio.

More Glass Tanks Used

One of the most important advances in the glass industry has been the recent remarkable development of glass tanks or vats, for industrial use, according to the Pittsburgh Plate Glass Co. Dozens of industries are turning to glass for their tanks, and the installation of new tanks and the relining of existent units with glass is increasing rapidly. Glass used for these tanks is tempered and strengthened for permanency.

Glass tanks are in no way to be considered as temporary. They are made strong and resistant to quick temperature changes, by a special tempering process which assures tanks that are permanent. Glass tanks are of high tensile and compressive strength, and are impervious to acids, alkalis, chemicals and liquids of almost any type. They are also non-absorptive and non-porous, and present a hard, level, sanitary surface requiring practically no maintenance. Standard Pittsburgh Plate Glass tanks are built of opaque Carrara structural glass, or of clear plate glass where transparency is desirable.

Only Extra Performance wins!



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A Few of the Many ALAKA Government Specification Finishes with Non-Specular Gloss as a Major Consideration

•

U. S. ARMY AIR CORPS 14105-B Lacquer Cellulose Nitrate Camouflage

•

U. S. ARMY AIR CORPS 14106-A Dope Pigmented Nitrate Camouflage

•

U. S. NAVY AERONAUTICAL M-485 c Lacquer Non-Specular

•

U. S. NAVY AERONAUTICAL M-498 Dope Cellulose Nitrate Pigmented, Non-Specular

Does your lacquer hold ITS SPECIFIED NON-SPECULAR GLOSS?

The Army and Navy are making our enemies know that our planes "are there"... without being seen. Visibility, in terms of gloss or reflection is vitally important.

In their specifications for aircraft finishes, they definitely indicate the permissible degree of gloss, with a small measure of tolerance.

They require that the finish on a plane in Sicily, Italy, New Guinea, the Aleutians or over the Ruhr, has the same degree of non-specular gloss, as it had when it was made, tested and approved. They expect, require and in fact, demand, that the finish holds its specified non-specular gloss regardless of the time which elapses between manufacture and actual service.

ALAKA HOLDS ITS NON-SPECULAR GLOSS. Here's the Proof:

Aircraft Lacquers SPECIFICATION LIMITS	0.1 to 0.3 per mil
ALAKA Lacquers When Manufactured	0.1 per mil
After 3 months	0.1 per mil
After 6 months	0.1 per mil

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Material Control Plan Gave Us 25% Savings

Finishing foreman explains a new plan whereby he now uses 25% less of finishing material but maintains his former volume and high quality output.

BY KARL M. SCHAAF

EFFECTIVE control of material-consumption is needed in every finishing department in order to secure standard and profitable finishing costs. Today it is vital for two additional reasons:

1) Loss of experienced spray men to the armed forces and their subsequent replacement by inexperienced help—often girls.

2) The increasing difficulties encountered by paint suppliers in securing raw materials, makes it necessary for users to "stretch to the limit" what material they can get.

Our problem boils down to these two hard facts: First, our new spray operators must be taught from the beginning to spray the right way; and second, measures of efficiency must be devised to chart their actual daily performance. I believe that we have achieved our goal of securing more and better paint conservation by giving special attention to these two problems. Also, I believe that the results we obtained can be made to apply in many other finishing departments throughout the country. In this article I am presenting a brief summary of our highly successful plan.

When the girl who is to be taught spraying enters our finishing department, we spend considerable time in preparing her for her new job. We put her at ease by asking questions about her interests and hobbies. We designate the locker she is to use and explain the facilities available to her. We ask her about her past experience, if any, and we endeavor to build up an interest in the job she is about to undertake.

We Begin By Teaching The New Worker

When this preparatory introduction has been completed, we present the operation. The spray gun is dismantled for her by our most capable spray hand and then reassembled. He leisurely shows her each part of the spray gun and explains its functions. He stresses the key points of the gun. Then he questions her carefully to find out what she has learned about the name and function of each individual part. He does all of this slowly and patiently. Only one part is taken at a time. He proceeds no faster than she can readily master all of the facts and details presented. This process is repeated

ARE YOU MAKING AMMUNITION BOX LINERS?

CALL O'Brien for information and prices on Enamel, Lusterless, Q.D. for Ammunition Box Liners (metal)—U. S. A. Spec.3-67E. This item can be used for either spray or dip application, airdry or bake finish. A one-coat product with high rust inhibiting quality built in. We can supply this finish in any color specified in U. S. A. 3-1 Color Card, whether infra-red reflectance type or not. Our experience with 3-67E has enabled us to give valuable application assistance to users. Perhaps we can help you. CALL US.

AMMUNITION LACQUER: U. S. A. 3-162B—furnished in any color specified in U. S. A. 3-1 Color Card. Either infra-red reflectance or non infra-red. Let us quote on your requirements.

O'BRIEN VARNISH COMPANY, SOUTH BEND, INDIANA

at least twice—three times if necessary. Rest periods are allowed, of course, to avoid tiring or discouraging the girl.

Then we test her by having her dismantle the spray gun and put it back together. She is invited to explain the key parts and their functions as she reassembles the gun. The teacher asks questions and explanations of each of the key points, and corrects any errors the girl might make. This process is continued until we know that she thoroughly understands the spray gun.

Detailed Instructions on Spray Gun Operation

After the mechanism of the spray gun has been mastered, our new girl is taken to a spray booth where she is taught, carefully and patiently, how to handle the gun and the material. The less difficult paints are used at first and special emphasis is stressed on triggering the spray gun, spraying flat panels, spraying into corners, and the all-important wrist action—to name only a few. It is pointed out to her that the spray gun must always be held at a specified uniform distance from the work and moved parallel to it to conserve materials.

She is told, and told, and told why "whipping" the gun wastes material, and why lack of triggering the gun at the end of each stroke wastes material. After she sprays a few pieces, she is questioned. In this way we learn whether or not she understands the purpose of the work and the real reasons for handling the spray gun a certain way. We ask her why the spray gun must always be held at right angles to the parts being sprayed, and why it must be moved parallel with the surface being sprayed, and why the trigger must be released at the end of each stroke. We continue this instruction until it is firmly and everlastingly fixed in her mind that the quantity of paint she uses depends solely upon how she handles her spray gun.

After we feel sure that our new spray girl understands the spray gun, its functions and correct operation, she is allowed to begin spraying, usually alongside an experienced sprayer. She is checked frequently and is encouraged to ask questions. Gradually this follow-up attention is discontinued and she is left entirely "on her own." If our worker hasn't learned, we know one sure thing: we have not taught her properly.

Material Control Plan Enters The Picture

In order to effectively follow up the performance of our new spray girl after she has been put on her own, it became evident to us that some plan would have to be installed to encourage efficiency in conserving materials — preventing waste. After several experiments we devised a plan that has netted us savings of about 25% of the total material used in our paint shop.

It was necessary to install a plan that would constantly keep before our workers the necessity of material conservation. The shortage of materials we use was constantly stressed; their importance in the all-out war effort was emphasized; and the ratio of paint used per sprayer, in dollar value versus the sprayer's wages, was cited. The very fact that unless each sprayer used no more material on any job than was specified, in order to meet costs, was stressed at length. It was made clear that

Your Bond Selling Responsibilities Double!

September 9th, your Government starts the greatest drive in history—the 3rd War Loan! The money to finance the invasion must come in large part from individuals on payrolls.

Here's where YOUR bond selling responsibilities DOUBLE! For this extra money must be raised *in addition* to keeping the established Pay Roll Allotment Plan steadily climbing.

Your now *doubled duties* call for these two steps:

1. Check up on your Pay Roll Plan at once. *Keep it climbing!* Increased Pay Roll percentages mean sufficient post-war purchasing power to keep the Nation's plants (*and yours*) busy.

2. Be a salesman in the 3rd War Loan, to see that every individual on the Pay Roll Plan puts an *extra two weeks salary* into War Bonds—over and above his regular allotment. These *extra* bonds cut the inflationary gap.

Financing this war is a big job—but 130,000,000 Americans are going to see it through 100%. Every citizen should turn every available dollar into the best investment in the world—United States War Bonds.

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BACK THE ATTACK With War Bonds!

This space is a contribution to victory today and sound business tomorrow by

INDUSTRIAL FINISHING Magazine

STANDARDS RECORDS

ITEM NO.	NAME	SQ. FT. PER UNIT	GALLONS OF STAIN PER 100 UNITS	GALLONS OF SEALER PER 100 UNITS	GALLONS OF VARNISH PER 100 UNITS
#100	Cabinet	40	17	18	16
#7	Chair	10	4.5	4.7	4.4
#30	Table	20	8.5	9.0	8.0
#101	Cabinet	40	17.5.	18.5	16.5

Fig. 1—Area of surface and quantity of finishes required are posted on chart.

the sprayers' jobs depended upon their efficiency — at least to some extent. When the plan was finally adopted, our spray girls entered into it with a friendly and competitive spirit.

How Our Material Control Plan Works

The square footage of every product we finish was computed and posted on a standards chart. The quantity of material to be allotted, based on the square footage of surface, was figured and also posted on this same chart, see Fig. 1.

We appointed a girl to take charge of our paint store room which, fortunately, is a fireproof room located centrally in our paint department. We acquainted her with these records. As the work to be sprayed moved to the spray stations, a ticket for the job (see Fig. 2) was given to this material clerk. She computed, from her standards chart, how much and what kind of material was to be allotted for the job, and directed its movement to the sprayer.

The sprayer, faced with the necessity of using no more material than is allotted for the job, gives special attention to her work and makes sure that no material is wasted. Inspectors constantly check the quality of the work to make certain that it is up to the high standard specified in our program.

As the material clerk disburses the paint she makes a record of the transaction on another chart, see Fig. 3. This chart shows the operator's number, a description and designation of number of articles to be sprayed, kind and quantity of material allotted for the job and, after the worker finishes the job, the quantity of material actually used. The efficiency of each operator is computed and the total material used and allotted

The Army wanted showers for soldiers in training. But metal wasn't available for shower-room walls . . . and tile was, of course, out of the question. So the shower rooms were built of wallboard and water-proofed with a remarkably hard, impervious enamel especially formulated for the purpose in the Arco Laboratories.

Thus once again the Arco Research Laboratories developed a functional paint which solved a specific problem.

Paints for Industry THE ARCO CO.
CLEVELAND, OHIO · LOS ANGELES, CALIF.

each day is figured daily by the clerk. This record is sent to the foreman.

Inasmuch as any inefficiencies can be quickly discerned by glancing over the daily record, this phase of the foreman's job is greatly simplified. He has only to go to the inefficient operator, watch her work and correct her mistakes. In most cases this brings up her efficiency. *(To page 68)*

MATERIAL MOVE CARD

PART NUMBER	#106 Cabinet
QUANTITY	100
ORDER NUMBER	X-10576
FINISH SPECS.	#307- Clear Varnish
MATERIAL ALLOTTED	12 Gallons
MATERIAL USED	(filled in by Sprayer)
SPRAYER	Janet Smith
DATE	Jan. 1-'43

Fig. 2—A job ticket for each product to be finished goes to the spray operator. It indicates the quantity of material allotted for that job. The material actually used is measured and this quantity is filled in on the card by spray operator.

DATE _____

PAINT DISBURSEMENT RECORD

OPERATOR	ARTICLE	PIECES	MATERIAL	GALLONS ALLOTTED	GALLONS USED	PERCENT EFFICIENCY
#600	#100 Cab't.	100	#107 Stain	17	16	106%
#691	#7 Chair	100	#2809 Sealer	4.7	4.7	100%
#680	#30 Table	100	#7203 Varnish	8.0	8.5	94%
#650	#101 Cab't.	100	#106 Stain	17.5	16.0	109%
				Average Efficiency		102%

Fig. 3—This record, made out by the material clerk, sums up the final results.

THE KNOWLEDGE...

BEHIND THE MAN...
BEHIND THE SPRAY GUN...

When your workman picks up a spray gun to apply an M&W finish, he has behind him 67 years of experience in producing chemicals and special finishes for thousands of products in all branches of industry. ☆ Manufacturers of war materiel are invited to take advantage of this background of information and experience. Our technical staff will be glad to help you with any finishing problems you may have. ☆ A copy of our booklet, "Information on U. S. Government Specification Finishes," containing an up-to-date list of specifications and the M&W finishes which meet them, will be sent on request.

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Results of the Plan

After the plan had been in operation two weeks it became apparent that we could cut our allotments of material about 10%. Three times after that we were able to cut our paint allowances still further, until our total reduction in paint consumption amounted to about 25% less than what we used before the plan was adopted. In a department that normally used over $100,000 worth of paint in a year, this savings resulted in a net yearly savings of about $25,000. In gallonage of materials used, our savings amounted to slightly less than that figure.

Whereas we had been faced with a possible curtailment in production, due to limitations on the quantity of finishing materals we were allowed by our suppliers, our position was greatly improved four months after we started our plan. Our new spray girls cooperated enthusiastically because they felt that they were really doing something toward promoting the effectiveness of the Nation's war effort.

If plans of this kind were put in operation in all paint shops throughout the country, the savings in vital war materials would help to speed the day of final victory, I believe. At any rate, it would prevent the wastage of vast quantities of finishing materials.

Painting Inside Tubes

APPLYING a protective coating material to the interior walls of tubes, and doing it with a brush —here is a job to write home about. Special equipment must be used for the purpose. Compressed air furnishes power for the outfit. At the end of an air hose a small air motor is attached. The brush, of rotary type, is fastened to the air motor by means of a universal joint. Alongside the air hose, making a "twin-hose" arrangement, is a hose that carries the paint and discharges it through a nozzle into the path of the revolving brush.

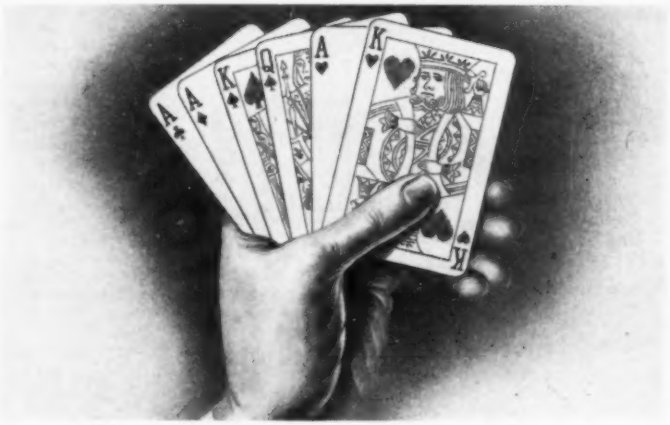
In operation, the brush and motor and nozzle assembly is pushed through the tube that is to be internally coated. The fluid delivery and the compressed air are then turned on, and the brushing head is pulled back through the tube. The brush spreads the fluid evenly over the tubing walls during this return passage. By handling it in this way, the coating is left undisturbed after it has been applied. An air-pressure regulator, pressure gage, and an air-driven fluid agitator are incorporated in the equipment, which may be either purchased or rented, depending on the amount of use one has for it.—F. M. C.

New Wrinkle Plans Technical Conferences

To further increase its service to its Licensees and users of wrinkle finishes, New Wrinkle, Inc., Dayton 2, Ohio, has inaugurated a program of regional technical conferences on formulation and production problems. These conferences will be held at determined intervals in cities throughout the country that offer a stragetic advantage for easy attendance on the part of licensees.

These conferences will be under the direction of William A. Waldie, whose extensive background as Technical Director of New Wrinkle, Inc., provides an unusual degree of experience to draw upon in coping with wartime finishing needs under material restrictions and in looking to the future.

Licensees in each region will be notified in advance to send technical representatives from their manufacturing and service departments to these meetings to obtain up-to-the-minute information that will enable them to better serve their customers.



IT ISN'T IN THE CARDS

No use dealing the cards to find the answer to your finishing problems. It's a job for experts. If it's a coating for metal, wood, composition board, paper, or fabric, we have the correct formula or can make you one. If it's a special problem arising from War Department or Navy specifications, we can help you. Our laboratories are at your service. No problem is too tough. Give us a ring at our expense: Phone Pittsburgh, CEDAR 8100. Our technicians are always glad to discuss coating problems.

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℞ Prescription Finishes

Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

Materials Supplies Equipment

Pre-Doped Aircraft Fabric

Speed-up of 20% to 30% in the painstaking process of "doping" the cloth that covers airplane and glider surfaces, is reported from the use of pre-doped fabric and a new "high-solvency" type of lacquer, both developed and now being manufactured by E. I. du Pont de Nemours & Co., Wilmington, Del.

Doping is necessary to produce air-tight tautness, as well as for protection against rot and mildew.

Savings in time and labor accomplished by the new materials substantially boost sub-assembly rates. Previous procedure called for stretching untreated cloth over sections of aircraft framework and applying dope with brush and spray gun—interrupted by laborious sanding — through eight separate operations. Now all hand-brushing is eliminated and the total number of coats is reduced with consequent saving in drying time. Aircraft plant floor space is more rapidly freed for use.

According to a Du Pont division manager, "two Du Pont developments contribute to this valuable saving in time and labor. First, by a unique method, we were successful in lightly pre-treating fabric at our Newburgh, N. Y. plant before shipment to aircraft factories. Our method permits saving precious solvents which we re-use over and over again. In addition, much sanding to smooth surfaces, an important factor in modern high-speed aircraft, is eliminated. The specially developed method of pre-doping allows retention of the pliability and tautening properties of the untreated fabric, with resultant ease of tailoring and satisfactory performance.

"Next, our laboratories produced a 'high-solvency' lacquer, or dope, containing 20% more film-forming solids than this type of finish ever before contained for practical usage. Consequently, today all slow paint brush work is replaced by high-speed spraying. With this development, still further reduction in the number of coats required to finish a plane is realized."

Maximum time savings are effected by combining these two developments, although each may be incorporated in present finishing systems with advantage.

Pickling Machine Steps Up Cleaning of Shells

Designed to meet the need for increasing production of shells, a continuous, drum-type pickling machine has been developed for high-speed cleaning of shell cases, according to the Howard Engineering & Mfg. Co., 1846 Freeman Avenue, Cincinnati, Ohio. This new machine, the manufacturer states, is designated to save vital manpower and critical materials, as well as to speed pickling output.

Actual operations reveal the machine is capable of pickling a maximum of 8000, 37-mm. shell cases per hour. Parts to be cleaned travel through the machine in a drum which varies in diameter between sections, so that each section of the drum runs in its particular tank. Scale is removed from annealed parts by successive pickling, rinsing, neutralizing and rinsing operations. A variable-speed drive provides for necessary changes in the pickling time.

An important and economical feature of this machine is its operation without the use of pumps. Acid, rinse and neutralizing solutions are picked up by scoops on the side of the drum,

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IN STEP WITH THE TIMES

Industrial Finishes
that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.

• **FOR APPLICATION BY ALL METHODS**

JAMES B. DAY & CO., CHICAGO

and are dumped by the scoops on the parts. This method is said to substantially reduce consumption of acid.

To withstand acid corrosion, the pickling and first rinse drums are made of monel metal and the tanks are lead-lined. This machine is available in special sizes and can be adapted to the pickling of parts other than shell cases.

Color Identification Coating

Brightly colored squares of cloth used to identify Army ground equipment and prevent American planes from attacking their own troops are coated with ethyl cellulose, the Hercules Powder Co. reports.

These patches of cloth, some of them only a few feet square, can be seen two miles up by fighter planes going at top speed. The Army uses a special ethyl cellulose coating because tests show it will remain fully flexible in winter cold and not get tacky in summer heat. No other type of coating tested measured up to Army requirements. The color will not run, and it is possible to keep the reverse side of the identification cloth panel a pure white color.

Thermoplastic Coating Has Many Uses

An additional development in thermoplastic coatings just announced is the compound called Amercoat No. 33, for application on metal concrete or wood. This product is a liquid plastic which is cold-applied by conventional spray or brush methods. It has a distinct practical advantage in that it may be applied in any number of coats required for any particular condition or use.

Amercoat No. 33 is a combination of the most inert synthetic resins obtainable and is the result of two years development and test both in the laboratory and in the field. It has shown excellent performance in such applications as lining for storage tanks and other equipment to protect foods from contamination by corrosion caused by dilute acids or caustics; for super-structures, deck machinery, ventilators and other marine equipment; for concrete urinals, shower bases and laundry trays in defense housing, Army, Navy and air bases, shipyards, factories, etc.; for protecting machinery and equipment in chemical plants, bottling plants, breweries and dairies from corrosion caused by acids and caustics.

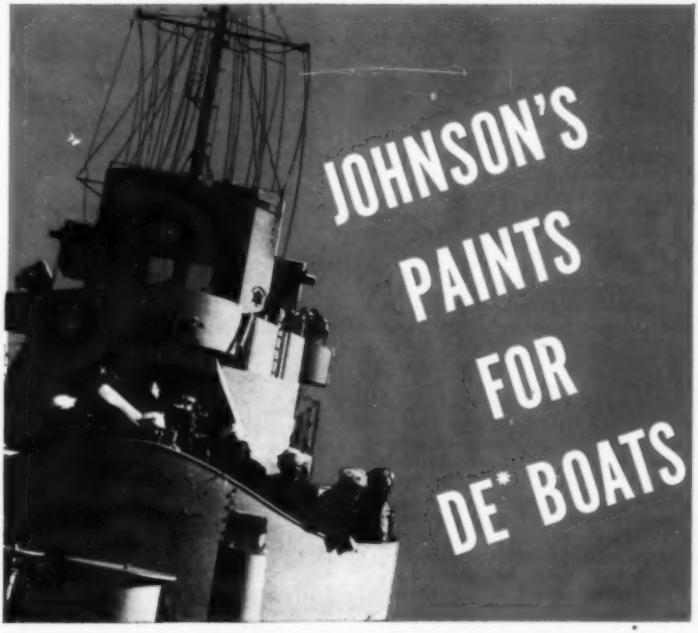
Full details on Amercoat No. 33 are contained in a new bulletin just issued. Write to the American Pipe & Construction Co., P. O. Box 3428, Terminal Annex, Los Angeles, Calif.

Hot-Wax Dip Tanks

As a result of the increasing widespread use of wax compounds on metal parts and products, and on packaged food for protection against salt water, high humidity, moisture, long-time storage and bacterial action, the Aerial Burner Co., West New York, New Jersey, announces two hot wax dipping tanks, which it claims melt wax faster at lower cost per finished unit.

Safe, convenient and economical.

The one illustrated here is the Wax-



Destroyer Escorts, our Navy has named them. But DE might well stand for *Deadly Enemy* to Axis subs...for these swift ocean greyhounds are built to deal out sudden disaster to undersea craft.

The sleek DE is not only hard for the enemy to dodge, it's also hard to see. Many a Destroyer Escort wears a coat of camouflage paint made by S. C. Johnson & Son, Inc. Other Johnson paints . . . special primers, fire-retardant paints . . . are also used on these new sea fighters.

Here at S. C. Johnson & Son, we are busy making many government specification finishes for war materials. Perhaps such finishes . . . now used on land, sea, and air equipment for our fighting forces . . . are what you're looking for. Why not write today for our Product Finish Folder F-265N. Your inquiry will be promptly answered.

Back the attack—with War Bonds

S. C. JOHNSON & SON, INC.
PRODUCT FINISHES DIVISION
Department IF-93
Racine, Wis.

master Model 1 WGT, with a normal liquid capacity of 30 gallons (about 190-lbs. of solid wax). It is for plants that have either city gas or liquefied petroleum gas at their disposal and require a large capacity unit.

It works on the "double boiler" principle. The inner boiler contains the wax. The outer boiler is fitted with an immersion tube heating unit and is filled with approximately 32 gallons of high-flash heat-transferring oil obtainable from practically any oil company, and which can be heated up to 600° F. if necessary. The average temperature of the heat-transferring oil required to melt and heat wax compounds to the proper temperature is from 180° to 350° F. It is this hot oil that melts and heats the wax.

This indirect method of melting and heating solid and semi-solid wax protective coatings prevents any scorching or burning of the material. To facilitate control of heat, a built-in thermometer is provided. Optional accessories are wire dipping baskets, and automatic heat control consisting of an automatic, electrically-controlled gas shut-off valve and thermostat.

A smaller model is portable and electrically heated.

Design, Dial, Product Marking

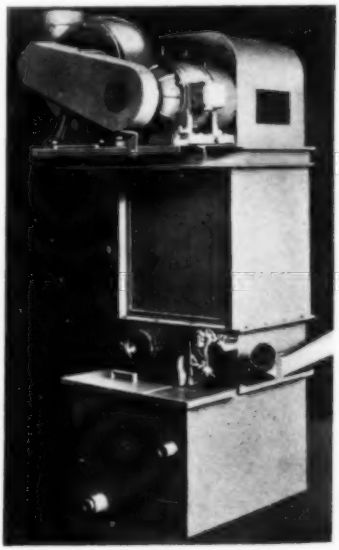
Designs, illustrations, markings, dials, gauges, scales, insignia, instructions, trademarks, etc., may now be placed on any surface, permanently and inexpensively, with facilities developed by the Multi-Mark Division of the Colonial Process Supply Co., New York, N. Y. This firm offers two distinct services to manufacturers requiring product markings.

Multi-Mark will reproduce any design, illustration, trademark, dial, or other marking on wood, metal, glass, plastic, textiles in one color or many colors—on any surface—with paint, lacquer, ink or synthetics. Permanence is assured, and complies with any government regulations for wear, weather and acid-resistance.

In addition to this complete production service, Colonial will also supply Multi-Mark Screens directly to manufacturers wishing to handle markings in their own plants. These screens can be used without special machinery, and are supplied complete with all necessary instructions. They can be made up from any copy, large or small; there is no limitation on size in either direction; even the smallest lettering can be reproduced by Multi-Mark. Inquiries concerning product identification services should be directed to Multi-Mark Division, Colonial Process Supply Co., 142 W. 23rd St., New York, N. Y.

Removes Grinding and Buffing Dust

A small sized unit is now being added to the line of orifice-type, collectors brought out by Peters-Dalton,



Particularly effective with magnesium.

These workmen are doing their job in clean, healthful surroundings using Paasche Airpainting Equipment in a plant "somewhere in Kentucky" building the famous Curtiss Skymaster.

Paasche

WATER WASH BOOTHS

Eliminate Fire Hazards . . . Assure Clean Exhaust

Conserve Paint . . . Promote Healthful Working Conditions

★ Add production hours to your day. Eliminate the time-wasting, hazardous job of spray booth cleaning by installing Paasche Self-cleaning Water Wash Booths. They reduce fire hazards to a minimum and are endorsed by safety engineers and industrial commissions. The Paasche booth is selected where safety is a prime requisite.

★ Paasche Water Wash Booths employ a constant curtain of water and the action of powerful sprays in the water wash chamber to wash down the overspray that otherwise accumulates on walls of booth, air distributing plates, fans and exhaust ducts. When air is exhausted, it is clean and free of paint particles. In many cases the precipitated solids can be reclaimed, making a substantial saving!

★ A sound, economic investment, Paasche Booths usually pay for themselves quickly in time and material saved. Booths are engineered to your individual needs. Write today for full information on Paasche Water Wash Booths and other Manual or Automatic Airpainting Equipment. Paasche Airbrush Co., 1917 Diversey Parkway, Chicago, Illinois.

Paasche AIRPAINTING EQUIPMENT

Manual, automatic and special airpainting equipment, airfinishing booths, pressure regulators, airconditioners for compressed air lines, air dusters and strippers.

Annou

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- SPRAYS SMOOTHLY
- DRIES QUICKLY
- SANDS EASILY
- CAN BE GLAZED
- GOOD HOLD OUT
- GOOD CLARITY
- TOUGH—DURABLE
- ECONOMICAL

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RELIANCE VARNISH COMPANY, INC.,

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WITH LACQUER SPEED

TUF-TEX

FINISH

IN FULL GLOSS OR SATEEN

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- VARNISH BODY
- HANDLES IN AN HOUR
- RUBS OVERNIGHT
- POLISHES OR DULL RUBS
- CLEAR—TRANSPARENT
- FULL GLOSS OR SATEEN
- NON SHRINKING
- HARD—TOUGH—DURABLE

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UISVILLE, KY.,—CHICAGO, ILL., U. S. A.

Inc., 628 E. Forest Ave., Detroit 1, Mich. It has a capacity of 1200-cfm, and has been designed especially to meet the requirements of the double-spindle grinding and buffing lathes, although it is adaptable to many other kinds of work.

It is particularly effective in work with magnesium. The cleaning action is caused by the scientifically directed movement of air through an orifice. A compartment at the side collects the sludge and permits its easy removal. Water level is controlled by a specially constructed diaphram valve.

Internal Degreaser

Equipment and materials for thoroughly degreasing the interior surface and mechanism of various housings and containers, is announced by Circo Products Co., 2835 Chester Ave., Cleveland, Ohio.

The Dee Tee Vapor Cleaner uses Dee-Solv solvent which, when heated, creates a constant flow of hot, clean vapors into the housing or container, where the vapors penetrate through any old worn lubricant or other substance, to the metal, condensing on the colder metal, washing and rinsing all inside surfaces free of whatever foreign matter is within. And, due to the fact the temperature (250° to 275° F.) of the Dee-Solv solvent vapor is higher than boiling point (212° F.) of water, all moisture due to condensation, etc., is completely removed, and the parts and housing are left perfectly dry and clean.

Better Burring Tools

The first cemented-carbide burring tools (rotary files) ever to be produced are announced by Carbur, Inc., Lincoln Park 25, Mich. The tools, to be known as Carburs, have cutting teeth which are ground from the solid. The cemented-carbide heads are securely attached to steel shanks by a new process.

Results of tests conducted in actual production, and in the aircraft industry in particular, indicate that Carburs will provide at least 50 times the tool life of high-speed steel burring tools. One report from an aircraft engine manufacturer supports the claim that these tools lasted 100 times longer than steel burring tools in production use on both cylinder heads and crankcases.

Providing a sharp cutting edge over a long period of time, these tools reduce burring time per part and generally increase efficiency in burring operations in all types of production.

At the present time, Carburs are supplied only in ball-end types in ⅜-in. and ½-in. sizes. These dimensions refer to the diameter of the carbide ball ends. The shanks are .250-in. diameter and the burring tools are 2½-in. long over-all. Under development are other sizes and shapes which will be announced as production tests are completed.

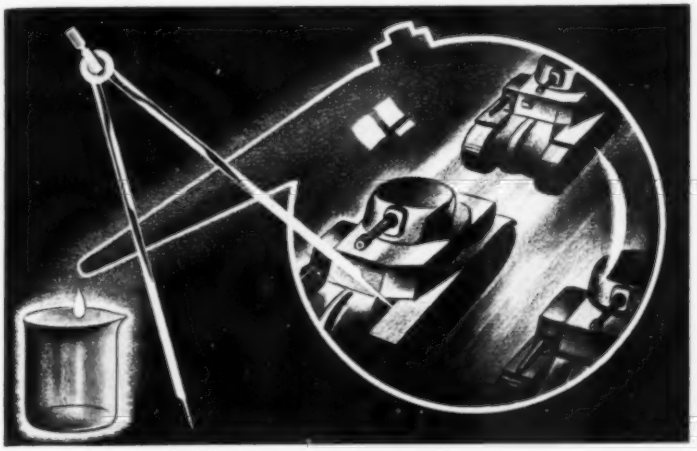
Tabl-Spray Metal Washing Machine

Designed to meet the need for high speed washing of flat, fragile work or circular parts with intricate pockets and crevices, the Tabl-Spray Metal Washing Machine has been developed by American Foundry Equipment Co., 555 S. Byrkit St., Mishawaka, Ind.

By reason of the completeness of the exposure given the parts in rotating them through the path of well-positioned power sprays, this new unit insures uniform coverage and thorough speed cleaning.

Parts to be cleaned in the Tabl-Spray are placed on the mesh table and rotated through the spray solution, discharged from special machined non-clogging nozzles.

After the few minutes required washing time, the solution valve is closed and the parts are left rotating to obtain proper drainage. If rinsing with fresh water is desirable, this operation can be handled without transferring parts to another compartment by means of a special arrangement of drainplates. A com-



INDUSTRY KEEPS PACE WITH A NATIONS NEEDS . . .

Industry marches on . . . the greatest concentration of productive energy on a single goal in the history of civilization.

Keeping pace with the needs of rapidly moving war industry is the chemistry of technological finishes . . . producing coatings which will protect against the salt of the oceans . . . withstand corrosion of fumes and chemicals . . . impart valuable electrical or physical properties . . . stand up under abrasion, vibration or violent impact . . . bear the intense cold of Alaska or dry heat of Sahara or sultry dampness of New Guinea swamps . . . answer untold and often secret requirements of war plants and laboratories.

You can improve your product by improving its finish. For wartime needs now . . . or peace-time requirements when the war is won . . . our experience can help you. Your inquiry incurs no obligation. Address The Stanley Chemical Company . . . manufacturers of Stanley Lacquers, Enamels, Synthetics and Japans . . . East Berlin, Connecticut.

Stanley Chemical

pressed air blowoff can follow the cleaning to remove excess liquid from the parts.

A system of straining devices placed in the path of the recirculated cleaning solution settles out all chips or foreign matter. The spray system is easily removable for cleaning and is fully accessible for adjustment.

The Tabl-Spray operates equally well with either an alkali washing solution or with a solvent emulsion.

Parts measuring 25-in. diameter and 12-in. high can be handled on the standard Tabl-Spray. Machines with 30-in. and 42-in. diameter tables for larger work are also available.

Typical cleaning applications of the Tabl-Spray include removing lapping compound, oil and chips from magnesium and aluminum aircraft parts, cleaning crankcases, supercharger rear housings and adapters, small assemblies, gears, rocker arms prior to inspection or after magnaflux.

Electric Writing Tool

An electric writing tool of special design is used for permanently marking brass, marble, tile, glass, plastics, wood, hard rubber, aluminum, steel and writes as fast as the fingers can move. Plugs into electric light socket. Leaves a permanent, legible mark. Cutting stroke is adjustable for deep or shallow cutting. It is a product of Bruer Electric Mfg. Co., 5100 N. Ravenswood Ave., Chicago, Ill.

Pre-Sprayed Lacquer in Sheet Form

"Pre-sprayed lacquer in sheet form" is the way the Meyercord Co., Chicago, Ill., describe their Sans-Arb lacquer-veneer re-creations of foreign and domestic wood grains. Any wood grain desired can be obtained on virtually any surface—wood, metal, plastic, glass or fabric.

The company points out that each sheet of Sans-Arb represents the equivalent of many hours of finishing time. Filling, staining, sealing, rubbing and undercoating are not necessary. All-over finishing, banding or trim are easily and speedily put on in a fraction of conventional finishing time. Machine application of Sans-Arb, Meyercord reports, runs up to 4500-ft. per hour.

Humidifier Moistens Room Air

A small cylindrical shaped humidifier about 3-in. in diameter and 10-in. long, known as Skilbeck E-120 "Little Giant" industrial humidifier, is capable of dispensing 42-lbs. of water per hour, or 120 gallons in 24 hours. This humidifier can be quickly installed in single units, or in clusters of two to ten or more, thus allowing for humidification of unlimited space to meet any area requirement.

The surplus condensate accumulating in the Humidifier can be drained back into the steam riser against pressure—or can be drained into a vacuum return line through a vacuum trap.

The adjustment screw at the top of the humidifier permits adjustment to obtain the relative humidity desired. The drain pipe with water seal keeps the unit free of an accumulation of condensate at all times.

The humidifier is distributed nationally by Techtmann Industries, Inc., 828 N. Broadway, Milwaukee 2, Wis.

New Plywood Adhesive

A radically new type of adhesive, developed by the Du Pont Co., Wilmington, Dela., is being used to bond the thin sheets of wood that are molded to form the bodies of military helicopters.

"The most important of several unusual qualities of this new plywood 'glue' is that it is both thermoplastic and thermosetting," a Du Pont chemist declares. "This means that when ply-covered forms are heated under pressure in ovens, the adhesive at first becomes fluid and permits the

MACHINE TOOLS—and their finishes by Lowe Brothers *can take it!*

Never in industrial history have Machine Tools been forced to take such abuse and hard usage, around-the-clock, as during the past two years.

Your Machine Tools must take this abuse day after day without failure, for precision accuracy and output must be maintained. A strong protective finish is one of its requisites.

Chances are you'll see such a finish (by Lowe Brothers) if you look through your plant—for Lowe Brothers Machine Tool Finishes have long been the first choice of the majority of manufacturers in this great and critical industry. You can see for yourself how well they resist abrasion and moisture, hot oils, cutting compounds, coolants and lubricants.

Lowe Brothers Machine Tool Finishes are just one example of the technical skill and broad experience that have been of great value to contractors and suppliers of war weapons and materials.

INDUSTRIAL SALES
THE LOWE BROTHERS CO.
DAYTON, OHIO

Lowe Brothers
WARTIME FINISHES *for Industry*
IN ACCORDANCE WITH U.S. GOVERNMENT SPECIFICATIONS

layers of thin wooden strips to move into intimate contact. After only 20 minutes the adhesive sets as a permanently tough, heat-resistant, insoluble material."

Plywood bonded with Adhesive No. 4624 is unaffected by the high temperatures that build up in the interior of airplane surfaces under a tropical sun. In fact, plywood of this type will withstand being boiled in water for three hours.

Adhesive No. 4624 is more costly at present than previous commonly used plywood bonding agents. It retains its flexibility at low temperatures, when most adhesives become brittle. Its initial plastic quality in the bag-molding process, permitting perfect contact of the laminations, not only greatly reduces the number of rejects, but improves the aircraft safety factor. The product is available today only for military use.

De-oderizes Paint Solvents

A small quantity of Ridsmel, liquid paint deodorant, may be mixed with any paint, varnish, or enamel, to eliminate usual odors completely. Ridsmel is now used in War Production plants and shipyards; its application is especially valuable when painting is done in areas that lack adequate ventilation.

Ridsmel does not affect color, drying, or durability of finishes; one quart of the solution will effectively neutralize 200 gallons of paint, varnish or enamel. This product is made by Holley Chemical Co., 125 E. 25th St., New York, N. Y.

Prepares Galvanized Metal for Paint

Quoting from the American Chemical Paint Co.'s circular on Lithoform: "If your structures or products are zinc or coated with zinc, Lithorizing will make it possible to keep them painted. Lithoform is low in cost, eliminates frequent repainting, saves the metal; produces a dense, stone-like coating of zinc phosphate which is not affected by the atmosphere, and which forms a film and lasting bond with paint. As a result, the peeling of all types of paint, lacquer and enamel is practically prevented.

"Lithoform is not a paint. It is a non-inflammable liquid chemical that is highly effective, yet extremely easy to apply."

The company's address is Ambler, Pennsylvania.

Chemical Developments

Chemical Developments Corp., 314 W. 1st., St., Dayton 2, Ohio, announces the following recent additions to its technical staff: Melvin A. Crosby, chief engineer; Gordon M. Williams, John R. Fisher, Jr., and Elizabeth D. Strickland, research chemists; and Dr. Lena Ranis Ziegler, patent chemist.

Service of Finish Technicians Offered Free

Finishine Laboratories, Inc., Syracuse, N. Y., is offering to its customers, the services of experienced field finishing technicians, to assist in solving finishing problems. This service is offered without cost or obligation. The company furnishes materials for finishing and repairing the finishes on furniture, home and office appliances, etc.

Fire Prevention

Fire Prevention Week will be observed from October 3 to 9 by proclamation of the President, and of the 48 governors. At that time an intensive nation-wide educational effort will be made to secure public interest and cooperation in reducing the loss of life and destruction of property by fire. Fire losses are on the increase and fires are destroying materials badly needed in the war effort.

Infra-Red Ray Devices Moves From Detroit

Infra-Red Ray Devices announces removal of its plant and office from Detroit to 66 S. Main St., Clarkston, Mich. The company manufactures Magic lamps and heaters.

Coat metal, plastic, wood or paper with FLOCK

Rayco "Flock" is textile fibres cut to uniform lengths, applied by adhesive to form a solid, even coating.

—TO OBTAIN A FINISH SIMULATING FABRIC, VELVET, LEATHER, ETC.

—FOR SOUND DEADENING

—FOR TEMPERATURE INSULATION

—FOR SOFT, NON-MAR, SHOCK-ABSORBING SURFACE

Rayco Flock is made in a variety of cuts and colors and is applied either as a design, or to cover the entire surface. We develop special styles to meet your special requirements.

REQUEST SAMPLES AND PRICES

RAYON PROCESSING CO. of R.I. INC.

55 TREMONT ST., CENTRAL FALLS, RHODE ISLAND

Developers and Manufacturers of Printing and Coating Flock

Booklets Catalogs Circulars

30 Quick Safety Lessons

National Safety Council, Inc., 20 N. Wacker Drive, Chicago, Ill., has published a set of 30 safety lessons, to help us avoid accidents where they occur most frequently—at home and on streets. Each one includes a cartoon illustration that tells the story at a glance. Pages are about 3¼x 9¼-in.

Heat-Treating Furnaces

A 4-page illustrated bulletin, printed in two colors, supplies quick information on Despatch CF furnaces, gas or electric fired, for temperatures of 275° to 1250° F. Write Despatch Oven Co., Minneapolis 14, Minn.

Supplementary Pages for Specification Catalogue

The Lacquer & Chemical Corp., 222 Fortieth St., Brooklyn 32, N. Y., has issued several supplementary specification pages which are to be added to its catalog of U. S. Government specification finishes recently published and distributed.

Fire-Extinguishing Catalog

The C-O-Two Fire Equipment Co., Newark, N. J., has issued a new booklet describing its line of portable and built-in carbon dioxide fire-extinguishing equipment and smoke detecting systems.

The booklet, printed in two colors and illustrated, describes the application and operation of various kinds of C-O-Two equipment such as hand extinguishers with the newly developed "Squeeze-Grip" valve, hose rack, hose reel and wheeled units, manual and automatic built-in extinguishing systems used for industrial, electrical and marine protection. Smoke detecting systems and recharging equipment are also included.

Copies of the booklet are available on request.

Oakite Cleaning News

Describing the significant part that selection and adjustment of equipment and proper surface preparation play in spot and roll welding of aluminum aircraft parts, a 4-page, illustrated, feature article by Mr. Don Holden, foreman of spot welding, Vega Aircraft Corp., Burbank, Calif., appears in the July-August issue of Oakite News Service, house magazine of Oakite Products, Inc., 57 Thames St., New York 6, N. Y.

Entitled "Spot Welding for Victory," the article places particular emphasis on the need for thoroughly and speedily removing oil, grease, dirt, as well as oxide film to obtain good, sound uniform welds on a mass production basis. In this connection, the use of cleaning materials and methods specially designed for this operation is discussed.

Military Packaging Information

A condensed resume of Military Parts Packaging requirements has been issued by the Cellophane Technical Section of E. I. du Pont de Nemours & Co.

This compilation is based on various packaging Specifications of the Ordnance Corps, Engineering Corps and Air Corps, as well as those used jointly by the Army and Navy. It lists the specification requirements of grades A, B, and C wrapping materials. It also features various methods of packaging and lists of typical products on which each method is used.

Copies of this may be obtained by writing the Technical Section, Cellophane Division, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

Degreasing Stainless Steel

Recent widespread interest in the "stainless" steels has prompted Oakite Products, Inc., New York, N. Y. to publish a 3-page Special Service Report entitled "The Fabrication and Surface Treatment of Stainless Steels".

Surface preparation is, according to the Report, simplified by the proper application of specialized descaling and degreasing materials. Suggestions on removing lubricating compounds,

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FINISHING REPAIRS QUICKLY DONE

WORRYING about the LABOR SHORTAGE. With the new Lubri-Paque Kit as illustrated below, which features the nationally famous Lubrisol Pad-O-Paque Process, any amateur or experienced finisher can repair any damaged finish in a few minutes and do an expert job.

MUCH TIME and labor are lost every day for the lack of proper equipment to make repairs on finished surfaces.

For a nominal cost every Furniture Store, Manufacturer and Repair Shop can now obtain a Lubri-Paque Kit, the newest and most complete repair kit on the market. Write for descriptive literature.

Also ask to have our Field Finishing Technician call upon you to assist you on your finishing problems and leave one of our new complete catalog and reference books on finishing.

FINISHINE LABORATORIES, INC., SYRACUSE, N. Y.

heat treating scale, shop dirt, etc., between manufacturing operations and before inspection and assembly are concisely given. Copies of the Report are free. Write to the Oakite Products, Inc., 57 Thames St., New York, N. Y.

Industrial Polishing Book

With more and more inexperienced operators being put on polishing jobs every day, this new James H. Rhodes Co. handbook and catalog will be of real service to manufacturers. Features include a detailed outline of the proper way to set up polishing wheels. An entire section is devoted to the care and maintenance of felt bobs and wheels, with each step illustrated for easy reading.

The J. H. Rhodes Co., 157 Hubbard St., Chicago, Ill., experts in all phases of industrial polishing and finishing, offer complete literature of all kinds of felt, rouges, steelwool—in fact, all related products used in metal finishing.

Motor Maintenance Book

With War Plants running 24 hours a day, seven days a week, their motors and generators are literally going bad unless . . . What can be done about it?

The new Ideal Maintenance Handbook tells how to keep motors and generators operating continuously at peak efficiency, without dismantling.

Every page, from cover to cover, (88 pages in all) is crammed full of valuable information to anyone interested in speeding up war production. Of course, a copy of this handbook is yours for the asking. Write Ideal Commutator Dresser Co., Sycamore, Ill.

Navy Book of Production Ideas

Publication of a new booklet, "Ideas That Work to Win", a guide to management for establishing and conducting various incentive measures to stimulate production in Navy contract plants, is announced by Rear Admiral C. H. Woodward, USN (Ret.), Chief of the Navy Industrial Incentive Division.

Defining industrial incentives as "those ideas which rouse the fighting spirit of American workmen and translates that spirit into increased or improved war production," Admiral Woodward declares that the booklet deals with the "human factors affecting production."

The booklet (24 pages 5x7-in. in two colors) catalogs various means whereby plants can on their own initiative or in cooperation with the Navy's Industrial Incentive Division, promote more and better production that will supply the men of the fleet with the necessary equipment for the conduct of the war.

Companies wishing to receive the booklet should write to: Industrial Incentive Division, Navy Department, 2118 Massachusetts Ave., N. W., Washington, D. C.

Free "Deduct-O-Graph" Shows Payroll Tax Deductions

Requests by the thousands, from industrial executives and payroll desks, are pouring into the George S. May Co., 2600 North Shore Ave., Chicago, Ill., for that firm's new device, called "Deduct-O-Graph," which automatically shows the proper payroll tax deduction for any employe, when proper settings are made as to marital status, wage range and pay period.

The George S. May Co. (Business Engineering) is giving these valuable calculators without charge to any firm requesting them on a business letterhead. The original print order was for 250,000 units, but requests already in sight will exhaust this first supply.

Foremanship Book

A new and practical illustrated book, "Foremanship and Accident Prevention in Industry," is published by the Engineering Department of American Mutual Liability Insurance Co., Boston, Mass.

It contains 94 pages 4¾x7½-in., and is bound in stiff red covers lettered in silver. It is divided into 8 chapters.

Nothing like it has been prepared for industrial foremen before, yet it contains no untried suggestions. It should fit nicely into the material selected for an overall foreman's training course. The section on women workers is particularly timely.

This book is based on the day by day experience of a group of safety engineers who work with every plan of production and safety organization in common use. The author, Arthur S. Johnson, assistant to the manager of the engineering department, has drawn upon the writings, suggestions and criticisms of several of the group.

The company (named above) states that, "In our accident prevention service in several thousand industrial establishments, we sense the need for a text on Foremanship, primarily directed to safety, and a desire on the part of many foremen to secure such a book."

"RINKOLIN"

a new wrinkle finish

made from LINSEED OIL

RINKOLIN has been PASSED and APPROVED for use on implements of war. It is really going over with a Bang!

One manufacturer writes, "It has done by far the best job for us of any wrinkle we've used in the past."

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Industrial FINISHING

Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metalworking, woodworking and miscellaneous industrial plants where production finishing is a major operation in parts and products manufacture.

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Editorial

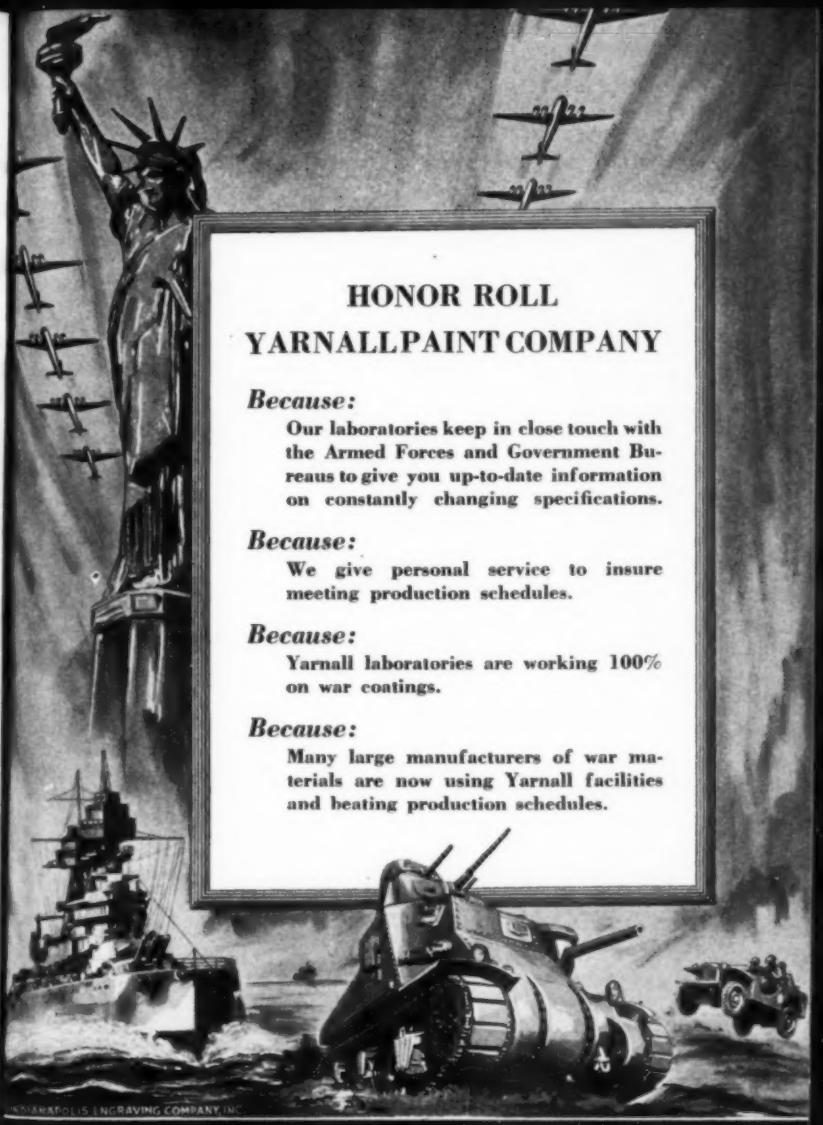
After-War Production; Ideas; Plans; Activities

Ideas, suggestions and plans for After-War activities of industrial establishments are definitely simmering in the background. Sound minds are confident of an Allied military victory in the not too distant future. And, notwithstanding all of the political changes that may occur, manufactured goods are going to be in demand by hundreds of thousands of people who will have money with which to make purchases.

What will be wanted and by whom; where and through what channels buyers will be contacted; what prices and terms will likely apply; what competition may swing buyers to or from certain products; what raw materials may be available and their probable cost; how much output to tool up for without making too hazardous a gamble — these and hundreds of other questions are factors being given consideration by management.

While many large firms have well-staffed research and product development organizations, some of them are extending their search for ideas and applications to the fountains from which so many valuable suggestions have always come—to factory employes and the general public. One firm is soliciting its employes for peace-time applications of some of its war products. To make the solicitation interesting and dramatic, contests are arranged to extend over a certain period of time. These are open to all employes. At the close of each contest a special ceremony is put on at which time valuable awards are given for what are judged to be the best suggestions. Employes have turned in a flood of practical suggestions which cover applications in practically every industrial field.

Some large concerns have fairly definite ideas on what they will manufacture after war. Models of their proposed products have been made up and, as time goes on, these models are studied as though they were in service. They under-



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Because:

Our laboratories keep in close touch with the Armed Forces and Government Bureaus to give you up-to-date information on constantly changing specifications.

Because:

We give personal service to insure meeting production schedules.

Because:

Yarnall laboratories are working 100% on war coatings.

Because:

Many large manufacturers of war materials are now using Yarnall facilities and beating production schedules.

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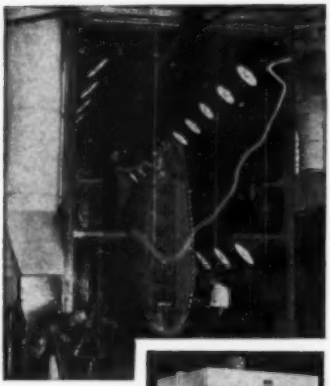

or Small Jobs...

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FINISHING EQUIPMENT SPEEDS PRODUCTION!

KOCH has designed, built and installed complete finishing systems as well as standardized finish baking ovens, for manufacturers of all types of products . . . wood, metal and plastic . . . with outstanding success. They can do the same for you.

PHONE, WIRE OR WRITE TODAY!

GEORGE KOCH SONS, INC.

Makers of INDUSTRIAL EQUIPMENT

2118 Penna. Street
Evansville 4, Ind.

go improvements from time to time as new developments take place in the world of science and industry; and as new sources of supply and consumer needs are thought of. Alternate materials, different forms of construction and changed outward appearances are included in the plans.

Among the several factors that are likely to affect what enters into After-War products, let us not forget that when our fighting men, workers, technicians and women in service return from foreign lands, they will bring along many ideas and suggestions—some for products, some for design and some for decorative effects. Decorative effects, in particular, are likely to include ideas never thought of before back here "in the old country."

Random Comment on the Industrial Scene

BY LAWRENCE H. SINGER

More Helicopters Coming—"I would be pleased," writes William G. Hawirth of Nash-Kelvinator, "to have you mention that we will go into mass production on the helicopter." On our desk is a photograph of the Sikorsky model which the company has arranged to manufacture for the U. S. Army.

In announcing his plans, G. W. Mason, president of Nash-Kelvinator, added that this newest venture will round out a production program that embraces Pratt & Whitney engines, Hamilton propellers, and many other items of a confidential nature.

"The helicopter we will build represents an advance over the model which recently underwent severe tests at Wright Field,"

PRECISION MARKING

Meeting Exacting Specifications

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2. MULTI-MARK Screens made up for any design; reproductions may be made directly on your products without the use of special machinery; complete directions furnished.

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COLONIAL PROCESS SUPPLY CO.

136 WEST 23RD STREET NEW YORK

commented Mr. Mason. Nash-Kelvinator's entry into this field confirms our belief that the helicopter has definitely come of age.

* * *

Re-Conversion News — Well-informed Washington sources believe that manufacture of a limited number of automobiles for essential civilian use, will start before the end of the year. And BUSINESS WEEK reports that some motor trucks will also be available, over and above military requirements. It is already widely known, too, that several locomotive manufacturers have stopped work on army ordnance, and are now engaged in production of rolling stock for European rehabilitation.

* * *

Aviation Industry Growth—How fast has the aviation industry grown? L. Welch Pogue, chairman of the Civil Aeronautics Board, cited these eye-opening figures in a speech before the Los Angeles Aviation Forum: In 1939, aviation ranked 44th in importance among our manufacturing businesses. This year it is a $20,000,000,000 industry, and next year it may hit $30,000,000,000. That would be eight times the top volume reached by automobile manufacturers at their all-time peak!

* * *

Grand Rapids Airplanes—"Made in Grand Rapids" has long suggested fine furniture. After the war, that phrase is scheduled to represent something additional—skillfully-built family airplanes. This is the result of the enterprise of 15 cooperating manufacturers, banded together under the name of Grand Rapids Industries, Inc.

For some months the company has been turning out glider and light airplane parts. But recently

MADE OF STRONG TRANSPARENT

PLASTIC!

Approved by U.S. Bureau of Mines for Protection against ALL Dusts

THE ClearVue MODEL

DUSTFOE RESPIRATOR

•All-Plastic Facepiece and Filter Containers •Transparent—filter sealer, etc., can be checked without disassembly •Lightweight-Compact-Comfortable!

Every popular design feature of the original Dustfoe has been retained in the Clear-Vue Model—now made of strong, transparent plastic! Compact, durable, odorless, non-corrosive, non-conductive of heat or electricity, this advanced respirator lets the user check at a glance the condition of filter, adjustment, seal and state of cleanliness without disassembly. Better-looking, too—more wearable! Get the important details in new Bulletin CM-6.

MINE SAFETY APPLIANCES COMPANY
Braddock, Thomas and Meade Streets, Pittsburgh, Pa.
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SAVINGS up to 25% of your Finishing Cost!

with a G. M. No. 5 PRESSURE SPRAY GUN

Patented Nozzle Reduces 25% Mist and Saves Paint

Better atomization, greater speed, G. M. Gun lays material more uniformly on object. Excess mist eliminated; paint saved. Patented nozzle with combination of external and internal atomization gives double breakage; finer atomization. From ⅛-in. to full wet 14-in. fan spray. Very moderate price. For details write Dept. L.

G. M. MANUFACTURING CO.
Engineers, Mfrs. of Complete Spray Equipment
216 N. Clinton St. Chicago, Ill.

it purchased patents and inventories of the General Aircraft Corp. The principal acquisition is the "Skyfarer," a spinproof, 2-passenger plane designed for pilots of limited flying experience. Molded plywood is the basic material used in the construction of these machines, and a big post-war market is anticipated.

* * *

England's Wartime Furniture—With furniture production sharply curtailed, U. S. manufacturers are watching with interest the standardized products being turned out by British manufacturers. TIME recently carried an extensive report of this development abroad. Twelve hundred struggling manufacturers have been reduced to 132 firms through a licensing system.

Only 17 essential items are being turned out. Use of wood and metal is cut to the barest minimum. All flat surfaces are made of a compressed wood fibre board ⅛-in. thick. The wartime patterns are so simple and functional that some of the designs may be continued in the postwar period.

* * *

Less Noise; Less Trouble—Here is a startling bit of information we've just gleaned from a report on acoustical control issued by the Celotex Corp: The Aetna Life Insurance Co. proved by actual test in their own offices, that sound conditioning decreased typists' errors 29% . . . decreased machine operators' mistakes 52% . . . cut employe turnover 47%.

* * *

Huge Electric Research—"We are glad to hear of your interest in the announcement of our post-war research center," writes E. Finley Carter, Public Relations Director of Sylvania Electric Products, Inc.

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RANDOLPH

FINISHING PRODUCTS CO.

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I. C. D. FORMULA NINE
NON-INFLAMMABLE
« wax free REMOVER »

for paint, varnish, lacquer, baked enamel, adhesives

EASY TO APPLY—NO AFTER-CLEANING

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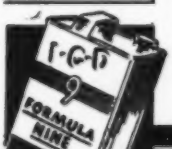
I. C. D. FORMULA 9 is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings . . costs less to use . . saves time, labor and material.



SPECIALTY COATINGS—I. C. D. Labs. have specialized in the formulation and manufacture of non-inflammable coatings and substitute finishes. If you have a tough coating or finishing problem send in your specifications, finishing schedule and requirements. Immediate action and a prompt reply promised.

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Has all the desirable qualities of Shellac.

Has extremely high resistance to water — Thins with alcohol — Dries fast and hard — Good adhesion — Sands easily.

It is a development of our laboratory and has been thoroughly tested over a long period.

A GENEROUS WORKING SAMPLE WILL BE SENT FREE ON REQUEST. WRITE TODAY.

NEW PERIOD PRODUCTION FINISHES

NEW YORK WOODFINISHERS SUPPLY CO., INC.

109 IMLAY STREET BROOKLYN, N. Y.

Established 1917

"Please make it clear, however, that this is a proposed project to be developed over a period of years, and that its location in New York is contingent upon zoning approval."

Sylvania's plans call for a huge administrative and research center, to cost about $2,000,000. Upwards of 1,000 workers would eventually be employed. The company's ambitious program is based on the anticipation of great post-war expansion in radio, flourescent lighting and electronics.

* * *

Plastics vs. Metals — Not long ago, the Aluminum Co. of America ran an ad which attracted considerable attention because it praised the virtues of one of its aggressive competitors. "Plastics do many things better than any other material," was the startling statement.

Now along comes Monsanto Chemical Co. to return the compliment. A recent magazine announcement reprints the Alcoa plug, and adds: "Obviously, plastics are not going to put metals out of business. Both groups of materials are cast for leading roles in the post-war period."

* * *

Forecast on Next Year and Next —B. B. Geyer, of the important New York advertising firm of Geyer, Cornell & Newell, Inc., has sent us a copy of his pamphlet—"What and When?" The New York "Times" recently stated that over 60,000 requests for copies of this publication had been received from industrial leaders.

In an accompanying chart (which was prepared last year), Mr. Geyer projects current trends in terms of probable future developments.

Here are some of his forecasts

CHEMICALS BY GLYCO

For The
PAINT, VARNISH, AND LACQUER INDUSTRIES

Send for our new catalogue, "Chemicals by Glyco."

Glyco Products Company, Inc.
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"25"

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Built to Stand the Gaff

SPRAY GUN
CROWN SPRAY GUN MFG. CO.
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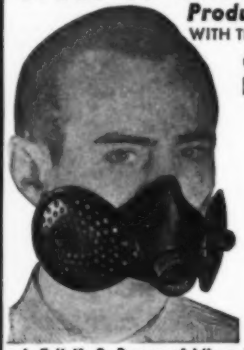
SPEED UP WARTIME Production!
WITH THIS NEW
Cesco No. 94 RESPIRATOR



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PAINT REJUVENATOR

Restores Paints, Lacquers, Enamel Products and Pigment Primers, to original consistency in 3 to 10 minutes without opening the can. Available for Round or Square 5-gallon cans. Explosion-proof electrical equipment if desired. Also other units from ¼-pint to 50-gallon drum capacity available. Originators of Paint Rejuvenating equipment — ten years—thousands of satisfied users.

Miracle Paint Rejuvenator Co.
500 ROBERT ST. ST. PAUL, MINN.

for 1944: Inflation of 10% to 25% over a year before in the early quarters; loans to manufacturers for post-war production; final allied victory in the fall, and an Anti-New Deal election.

We underscored this striking statement in the pamphlet: Average savings will be $6600 per family in 1945, as against $2200 in 1939. This completely revises former estimates of the size and quality of markets for consumer goods. In a letter to this department, Mr. Geyer writes: "The forecast dates and figures can only be the expression of my own belief. Also, it must be recognized that if the war is prolonged another year or two, or if we have uncontrolled inflation, all conclusions would have to be severely modified."

* * *

Diesel Engines — The fact that Diesel engines do not lend themselves to high-speed operation will prevent them from competing in the post-war period to propel airplanes, in the opinion of Dr. A. B. Culbertson of the Shell Oil Co. He predicts that although Diesels may be used in certain heavy-duty trucking operations, their main field will be the railroads and stationary power units.

* * *

Tomorrow's Markets; Buyers' Demands—Some noteworthy statistics were recently cited by J. J. Nance, vice-president of Zenith Radio Corp., to show the enormous post-war backlog of electrical appliances. Speaking before the Sales Executive Club of New York, he said that although there were 3,500,000 refrigerators sold in 1941, only 500,000 were marketed last year. The figures on radio sets were also striking—almost 14,-

"God Is My Co-Pilot"

AIRPLANES
GUN STOCKS
BOMB SIGHT BOXES
TOOL CHESTS
MARINE PARTITIONS
RADIO INDUSTRY, ETC.
SKIS
INSTRUMENT BOXES

COL. ROBT. L. SCOTT, who commanded the fighters of the 14th Air Force in China under Maj.-Gen. C. R. Chennault, has painted a very vivid and interesting picture of their operations in his book "God Is My Co-Pilot." It is an inspiring story of the great courage of our airmen and of their high regard for the equipment sent them.

Col. Scott speaks of his P-40 called, "Old Exterminator," and its power plant, the Allison engine, in words of high praise. The men who built this equipment and who helped make the 14th Air Force possible should take great pride in their work and in the achievements of our airmen in China. *Listed here are a few of the war products now being coated with our materials. Phone, wire or write and let one of our finishing experts help you "keep production rolling."*

THERE'S NO TIME TO LOSE—THERE'S JUST TIME TO WIN!

THE LAWRENCE-McFADDEN CO.
Headquarters for Fine Finishes Since 1875
7430 STATE ROAD PHILADELPHIA, PA.

000,000 sets in 1941, against approximately 4,000,000 in 1942!

* * *

Ask Buyers What They Want—General Electric Co. has been circulating an interesting questionnaire to the firm's thousands of stockholders, in an effort to obtain a cross-section of tastes concerning post-war products. Here are some typical questions:

Would you like a refrigerator with revolving shelves or sliding shelves? Would you want a quick-freezing compartment? Would you care for a garbage disposal unit? Do you think you will buy an automatic blanket?

Commenting on the poll, General Electric sums up the industry's merchandising problem this way: "Only 5% of American families know the benefits of electric cookery. Fewer than 1% have ever seen an electric blanket. In 98% of American homes, the common-sense luxury of the electric dishwasher and the garbage-disposal unit is unknown. In an old but still good nutshell, our big job is more goods for more people at less cost."

* * *

Cooling With Gas—After several years of reticence, Servel Inc., is again preparing to make a bid for a substantial slice of the air-conditioning market with a new improved gas-fueled unit. That seeming contradiction—cooling by means of heating—is now far past the experimental stage, and the company is making ambitious plans to tackle the post-war market. Servel's new product is designed for homes or commercial build-

ings; it provides cooling for hot weather, heat for the winter months, and ventilation throughout the year. Many engineers have long contended that gas air-conditioning has great advantages —principally because there are practically no moving parts to wear out.

* * *

Ordnance Plants' Orders—We reported last month that the huge Lake Ontario Ordnance Works, in upper New York State, had ceased operation early in August. The War Department has since released information showing that at least seven other similar new plants have been put in a "stand-by" condition.

Emphasizing the fact that these actions resulted from improving war trends, Robert P. Patterson, Undersecretary of War, added this statement: "The effect of such changes upon our production schedules was disturbing, but the underlying causes were so favorable that they completely overshadow our own disruptions."

Cutbacks to date total more than all contract cancellations at the end of the first World War—$8,-00,000,000.

* * *

Zone Heating Will Come—Mr. C. B. Sweatt, vice-president of Minneapolis-Honeywell Regulator Co., predicts that, out of experiments conducted for temperature control in airplanes and other combat machines, will come knowledge that will be applied to "zone heating" of post-war homes. Each room will be heated to the desired temperature, without regard to other parts of the house. This development, says Mr. Sweatt, will save both fuel and tempers!

* * *

Broadcast Tickets—As previously announced, readers planning to visit New York may obtain free tickets to numerous outstanding radio shows by writing Lawrence H. Singer, 130 W. 86th St., New York 24, N. Y.

Classified Advertising

Rate: 45 cents per line per insertion — minimum $1.35

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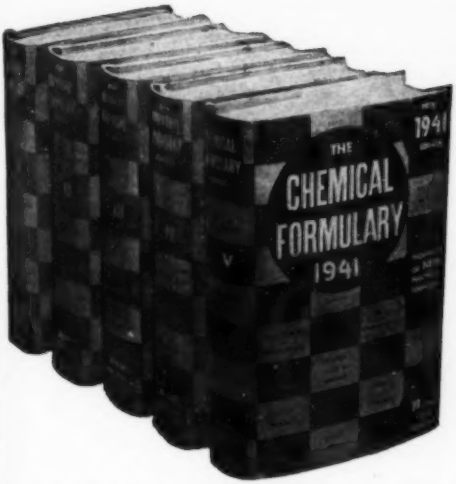
WANTED.

A 500-750 gals. grinding capacity Steel Pebble Mill for paint, with steel balls with or without motor. Address IF-943, care Industrial Finishing.

FOR SALE

Baked enameling and truck painting plant in large mid-western city. Plant has been in operation ten years. Business well established, now doing war work in addition to large truck painting contract. Clears owner seven to ten thousand dollars per year; books open to financially responsible party. Owner in poor health reason for selling. Ovens and other equipment in fine condition. Price, $12,500.00; terms may be arranged. Address IF-949, care Industrial Finishing.



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Best for Infra-Red Ray Baking and Drying

Carbon Filament Lamps, service proven, available in Inside-Silvered (self-reflecting) or in Clear Glass types. Write for details.

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ST. LOUIS, MO.

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Netherlands

THIS FLAG, representing the land of windmills, tulips and canals (there are 4817 miles of canals in Holland) is one of the oldest of national emblems, having been originated in the year 1354. With their homeland invaded and occupied by Germans in May, 1940, and their East Indies colonies invaded and occupied by Japs in March, 1942, only their West Indies and South American possessions remain unscathed by the war. This is a hard blow to a liberty-loving nation of stout-hearted people, but the day is near — perhaps nearer than we think — when these sturdy Dutch will rise against the oppressors and, with the aid of their allies, expel the invaders from their country and their possessions.

★★★★★★★

We here at Advance are 100% behind the call for unconditional surrender of our enemies—and we're doing all in our power to help bring it about. We're fighting, we're making war finishes—and buying bonds.

★

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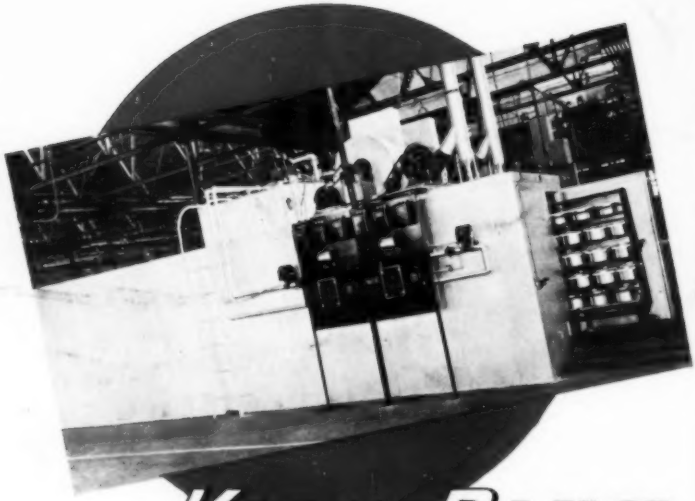
Manufacturers of Wood & Metal Finishing Materials

INDIANAPOLIS, INDIANA



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